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ABSTRACT

This collection of articles of international appeal on the future of vocational and technical education and training begins with an introduction by William Hall and includes the following papers: "New Vocationalism in the United States: Potential Problems and Outlook" (Benson); "Learning within a Work Context: Training Concepts, Experience, Developments" (Laur-Ernst); "The Unitisation of Qualifications across the Academic/Vocational Divide: Implications for Curriculum Design and the Measurement of Quality" (Stanton); "Reform of Tertiary Education: The New Zealand Experience" (O'Connor); "Policies and Practices in Vocational Education and Training in Australia" (Stevenson); "Influences and Trends in the Liberian Vocational/Technical Education System: Prospectus for the Nineties and Beyond" (Witherspoon); "Reforming Vocational Learning? Contradictions of Competence" (Jackson); "Lessons Learned in Scottish Competence-Based Systems" (Gunning); "How Convincing Are the Arguments against Competency Standards?" (Hager); "Selection for Vocational Education: Some Lessons from Elsewhere" (Foyster); "Quality Improvement in the Vocational Education and Training Industry" (Holland); and "Quality Assurance Audits in Technical and Further Education: Meeting the Needs of the Ministers" (Navaratnam). Most of the papers include substantial bibliographies. (MN)

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What Future

for technical & vocational education & training?

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WILLIAM C HALL (ED.)

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NCVER

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Introduction

William C. Hall

Over 60 papers from over 20 countries were presented at Australia's National Centre for Vocational Education Research (NCVER) international conference 'What future for technical and vocational education and training?' which was held from 14-18 December 1992, in Melbourne, Australia. Over 250 participants spent five days discussing the issues which were raised.

The United Nations Educational, Scientific and Cultural Organisation (UNESCO) has funded this publication which, as well as this introduction, includes 12 of the conference papers. These papers were selected on the basis of their international appeal and their general applicability. Some papers evaluate the past; some deal with the present; and some discuss the future.

World-wide, vocational education and training are subject to similar major trends. These trends may be classified under the headings:

- administrative
- curriculum
- delivery
- social.

'Administrative' trends include the changes to administrative structures, with a strong push outwards to decrease the power of central administrations in order to encourage local decision-making. This sharing of responsibility is frequently linked to 'performance indicators'. Articulation (the granting of credit for work done, or experiences gained, when moving from one course to another) is also largely an administrative matter. (Many will argue with that statement, but I will defend it strongly. It's people who erect barriers, not the curriculum.)

'Curriculum' includes the movement towards competency-based training and assessment, which is frequently linked to modules and self-paced learning. 'Curriculum' also includes institutional academic drift and the broadening of the curriculum to include general as well as vocational education. It incorporates the major influence that assessment has upon the curriculum (for better or for worse).

'Delivery' has become the decade's hot issue, with the jargon 'open learning' gaining widespread currency. It has a good ring to it. Changes to delivery

also have important implications for teaching and the upgrading of teachers' qualifications. Most vocational educators were brought up in the 'old school' of talk and chalk, so new ways of delivery present a major challenge to them.

'Social' trends encompass the equity movement, the need for student counselling, and the importance of health, safety and welfare to be incorporated in vocational courses. Indeed, health, safety and welfare should have vocational education institutions as exemplars, but this is not always the case. Workshops, for example, do not always reach the required standards.

In this introduction I would like to look at each of these four trends in turn.

Administrative trends

There have been three main administrative trends. They are not peculiar to vocational education and training, but common to management across the world.

First, there has been the movement to flatter management structures. The old army model, with its pyramid structure, is now seen to be of limited applicability. However, in some instances, the equally common management trap has not been avoided: the structure has become too flat and so managers have been directly responsible for too many people. I know of one vocational education organisation where 37 senior managers report directly to the chief executive officer.

Second, there has been a strong push to transfer decision-making as far down the hierarchy as possible. Central administrations love to have power over information and finance, and this power has often been quite absurd. I know of one country where highly paid polytechnic directors had to get approval for expenditure of even small amounts of money from clerks employed in the government offices. We now know that complete levels of administration can be removed entirely, if this aspect of centralisation is scrapped, thus saving both time and money.

Thirdly, although there has been a movement towards flatter management structures, and although there has been transference of much decision-making from a centralised bureaucracy to colleges, there has been a centralising of policy-determination and a sharp policing by the bureaucracy of vocational educators. This is being done through what has become known as 'performance indicators' which are linked to (so-called) 'strategic planning'. 'Performance indicator' is just a fancy word for what used to be called 'evaluation variable'. Indicators themselves are harmless enough; it is

how they are being used by bureaucracies that needs careful attention.

Quality assurance is now finding its way into vocational education and this must be applauded. However, quality variables in one context (e.g. a factory) may not be entirely transferable to a different context (e.g. a college).

Curriculum

The world-wide movement to competency-based training and assessment is an irresistible force. Some countries (such as Germany and Scotland) are much further down the road than others.

Competency standards have produced a whole host of zealots, fundamentalist in attitude, and determined to conquer the world. The rhetoric goes something like this: only when outcomes are known (in terms of precisely defined skill competencies) is it possible to decide whether a person should be licensed. Success will not be determined by how long a person has trained, but whether skills have been attained, regardless of how long that process has taken.

So now we have huge sums of money being spent developing thousands of detailed skill statements. There are two pitfalls in all this effort. First, the actual jobs that people do rarely conform to a combination of published, discrete highly mechanistic skill statements. Life just isn't like that. In particular, attitudinal skills are frequently neglected. Second, the old adage that 'the whole is greater than the sum of the parts' is as relevant today as it was yesterday.

In fairness, those who are experienced in competency-based training recognise the pitfalls and mostly avoid them. A further pitfall is to equate competency-based training with 'modularised self-paced learning'. (What horrors of jargon we inflict upon ourselves.) There are no essential correlations between 'modular', 'self-paced' and 'competency'.

A major weakness in much of the present vocational education curriculum development is the amateurish approach to assessment. Fortunately, there are some organisations that are extremely proficient with extraordinarily high standards of validity and reliability. I use the word 'assessment' in the broadest possible way, so my concerns extend to our present approaches to the recognition of prior learning.

Training takes a wide variety of forms: on the job; off the job; formal; informal; closed; open. It is being recognised that a single approach will rarely satisfy everyone and yet everyone wants their successful learning to

have currency. This is known as articulation, about which there is much rhetoric but little action. One reason for this is because it has been largely treated as a curriculum problem, whereas it is not. It is an administrative matter which should be solved administratively. Interestingly, competency-based learning should assist in this.

Two other curriculum matters should be mentioned. Firstly, academic drift; secondly, the place of general, adult education within training. Throughout the world, academic (upward) drift seems to be a fact of life. Such movement is caused by three pressures: professional/trade bodies; vocational education institutions seeking (what they regard as) respectability; and the upward academic drift of higher education (thus creating a middle-level vacuum). The future of middle-level courses is one of Australia's most important issues.

There is a strong push to make vocational education purely 'technical', with much that is presently called 'adult education' finding no place within it. This would be a mistake, because many vocational education students come via adult education; and there must be a general component to vocational education.

The 'education' versus 'training' debate has always been with us. The assumed dichotomy is a nonsense because it bears little scrutiny. Education is training and training is education; and I'll challenge any university to prove otherwise!

Delivery

The walls of colleges are no longer sacrosanct. For the past 10 years especially (longer in a few countries) it has been appreciated that people can learn at home or at work just as well as, and in some cases better than, at a formal educational institution.

Consider a typical course. A student must enrol at a fixed time, at a fixed place, for a course which is taught at fixed times in a fixed location over a fixed length of time, which is assessed at a fixed place, and requires fixed prerequisites. I've use the word 'fixed' seven times, indicating what little flexibility is offered.

All of that is now starting to change, so that students may enrol when they desire, study where it is most convenient for them, and be assessed when they are ready. This approach to delivery is called open learning. Although few courses are entirely open, there is a world-wide trend to remove many of the restrictions mentioned above. However, for this approach to succeed, governments will have to recognise that large amounts of money will need

to be spent on staff development. Unfortunately, governments are happier spending money on new buildings with a brass plaque at the entrance emblazoned with someone's name, than on less tangible assets such as teachers.

Here I should also mention the increasing importance of private training providers. These providers tend to concentrate on low capital cost courses. (There aren't many private engineering colleges.)

Social

In many countries there persists the belief that some jobs are for men and some for women. Attitudes are difficult to change and this sort of prejudice is especially difficult to deal with. Interestingly, 'men's work' in one country may be 'women's work' in another. Legislation may decree that all are equal, but entrenched attitudes ensure that there is a wide gulf between theory and practice.

Often, minority indigenous populations are the ones that suffer most discrimination. Appropriate training can help to deal with this problem, but only partly. Similarly, help may be given to the handicapped, although unfortunately much needs to be done in some less developed countries to provide training for the physically and mentally handicapped. These people are at the bottom of the list of priorities.

Occupational health and safety is being increasingly regarded as important (mostly for economic reasons, I suggest, rather than for the welfare of workers). Training institutions, themselves, have not always been the best examples of occupational health and safety, and clearly that must change. Developing countries have got the farthest to go in dealing with this problem.

Social equity aims, and the vocational education aims of industry and commerce, are almost incompatible. Social equity aims will only be achieved through governmental spending and strong political support.

The future

The present (rather than the past) helps to determine the future. Which of today's trends and pressures will influence the future shape of vocational education?

First, 'vocational education' is highly political in both the broad and narrow senses of the term. Important governmental aims depend on vocational education for their achievement. However, most governments are not long-term planners; and vocational education's achievements are more likely to be long-term than short-term. Therefore, we are likely to see a continuation of quick-fix labour market programmes (with a training component) which, in the long term, usually achieve little.

Second, delivery will continue to change, with off-the-job becoming more general and on-the-job continuing to be highly specific. Governments will recognise that most training takes place on the job, and that the policy and bureaucratic challenge is to integrate on-the-job with off-the-job training thus giving off-the-job training proper recognition.

Third, a smaller number of much larger vocational education administrative units will continue to be formed. There will be tension between central bodies who see it as their duty to determine policy and the larger, combined, multi-level institutions which have to deliver programmes. Tension can, of course, be creative . . .

Fourth, the thin equity veneer in most countries will, unfortunately, change little. Governments must understand that the removal of negative discrimination, of itself, does little to alter community attitudes.

Fifth, in many countries there will be a strong push to privatise much of the vocational education. Enterprise training will also increase in importance.

What we need is a policy framework for the future. I was privileged to be rapporteur for the UNESCO convention on technical and vocational education. That convention is a model for future planning. How many planners have read it?

1 New vocationalism in the United States: potential problems and outlook

Charles S. Benson

Introduction

The topic of this paper, 'new vocationalism', deals with a set of profound changes being proposed in the education of American youth. The changes, should they be set in place on the larger scale, would affect mainly the seventh through the 14 years of schooling, but there are also wider implications. The new vocationalism seeks to establish three distinct but interrelated types of integration. The first is integration of academic and vocational studies, meaning the blending of theoretical, abstract learning with the acquisition of practical and applied skills. The second is integration of secondary and post-secondary education. Such an articulation of curricula has long been established for the minority of students who proceed directly from high school to the baccalaureate, but the majority has not been so served. The third is integration that establishes a much closer relationship between education and work, such that these two main components of human activity should each enhance and elevate the other.

As is true in some other Anglo-Saxon countries, the US has a strongly skewed status structure in the education/work nexus. Middle schools prepare students for high school in the absence of a real effort toward career orientation. In high schools, the only part of the curriculum to hold respect of students, teachers, and parents is the programme preparing students for four-year college and the baccalaureate. Vocational education is derided, even though there is hardly anything more vocational in content than the programmes of Harvard law and Harvard divinity.

Which leads to the second point, namely, that we in the US devalue frontline workers and the skills they possess. This attitude is more taxonomic than rational. It is not, for example, a matter of mind over hand. The brain surgeon needs manual skills as much or more than an electronics technician. Nor is occupational status strictly related to the intellectual demands of work. I suggest it requires greater mental prowess and

discipline to become a tool and die maker than to obtain an accounting degree from a state university.

The new vocationalism does not seek to turn the education/work status structure on its head. That would be tilting at one windmill too many. The broad objectives, on the other hand and as I understand them, are three-fold. The first is to enable almost all students, not just a minority, to obtain a thorough working knowledge of maths, sciences, and languages. That is, the first objective of the new vocationalism is to help many, many more students obtain a much higher standard of academic proficiency. The second objective, more obviously, is to help many, many more students gain such a level of occupational proficiency that they enter easily and quickly upon productive, rewarding, and interesting careers, as careers are traditionally defined. The third objective is to enable students become workers to transform the workplace, so that it exists as a safe harbour for work and lifelong learning entwined.

Admittedly, the third objective is the visionary one. In general, we lack a vision, in the present time, for relating education to 'work'. Work, as the term is used here, means a process of human development, offering both extrinsic and intrinsic rewards, with lifelong learning being part of the intrinsic set. Work stands in contrast to 'labour', which is repetitive, often lonely, and devoid of learning and exploration. Work, generally speaking, offers increases in one's material standard of living; it also offers a growing power to make contributions to life on this planet. Labour is what one is forced to do for survival. In special cases, work may be done without pay, that is, for its own sake; labour seldom is.

Just how to gain the third objective of the new vocationalism—the transformation of the workplace into a learning place—has not been thought out very clearly. There are glimmerings, however. Our new (1990) federal vocational act urges local authorities to 'teach all aspects of an industry' a person seeks to enter. Through specially designed courses in such fields as history, philosophy, science and economics, students would be encouraged to understand the contributions that different lines of work make in the social development of a region, a nation, and the international community. The result, one would hope, is that people in even, forgive the phrase, ordinary jobs would think of their work as a vocation in the spiritual sense. As Theodore Roosevelt said in 1902, 'Far and away the best prize life offers is the chance to work hard at work worth doing'. Emboldened by the conviction that their work was socially significant, more employees might press successfully upon management the need for, and the desirability of changing processes to foster more worker creativity.

In passing, please allow me to re-emphasise a distributional point about the operation of our educational system. For many members of the college

prep, four-year college track, education is related to work at least in the sense of the students' being aware of the connection between educational performance and extrinsic rewards (one is an engineering major or a pre-med or a computer science major); students in the college prep track are also likely to be imbued with the idea that what they aim for is 'work worth doing', in Teddy Roosevelt's phrase. For the other 70 per cent of an age cohort, the connection between education and work not only is undefined in terms of extrinsic rewards—the effort to clarify the connection is simply not made—but the implication is given that what this larger groups aims for is not worth doing. The differential impact on motivation of young persons, comparing those in the college prep track with those who are not, to study hard and long, appears to be obvious.

Let us consider the question under the three types of integration mentioned above. The three reforms are hierarchical in nature, in that the second presupposes the first, and the third presupposes both the first and the second.

Integration of academic and vocational studies

In the US, there is a reasonable degree of consensus on appropriate means of development of younger children. High quality child care, adequate nutrition and other attributes of good health, early education, avoidance of excessive television-watching, parental involvement, cooperative learning in the elementary grades, these are some of the pieces of a comprehensive programme that people agree do work. When we come to middle schools, secondary schools and community colleges, we find no lack of experimental programmes as well as a few active coalitions, but nevertheless we lack a similar set of well proven, replicable, and complementary components of reform that we already have in mind for younger children. We certainly lack a vision of what education at age 13 plus should be outside of preparing for college prep, taking college prep and going to a four-year college or university.

The main direction of education reform proposals for students aged 13 plus over the last decade has emphasised the college prep model. The requirements of the number and type of academic courses to be completed for high school graduation and for entrance to four-year colleges have been enhanced; raising academic requirements are the common, central features of school reform of the 1980s. Little attention has been paid to instructional/learning processes or to the possibility that there are important differences in students' learning styles, indeed the probability that the college prep programme, as conventionally presented, is an ineffective teaching/learning strategy for a majority of students. What can be said without contradiction is that so far at least, a decade worth of reform has not addressed successfully the ills of the American educational system. In

summary, these are three: low standards of student attainment, especially in maths and science; low levels of personal attachment to intellectual inquiry, even among graduates of a four-year college; and a poor record in school-to-work transition. With respect to the last point, I refer to the high probability that a person who seeks to enter the labour market with the BA will wander from one minimum wage job to another for about 10 years before finding a place to begin a career.

The integration of academic and vocational studies in secondary schools is proposed as an alternative to the college prep curriculum. Let us be clear about the meaning of 'alternative'. In an integrated programme of instruction, the objective is for students to acquire more, not less, academic knowledge. The objective is to be reached by embodying the pedagogical strengths of vocational education practice into the presentation of theoretical concepts. Through use of these pedagogical practices, academic knowledge is intended to be made more accessible to the majority of students, perhaps for the first time. In an ideal programme, virtually all students would meet the requirements of entrance to four-year college while at the same time gaining skills to enter the workforce directly with good career prospects. Pilot programmes suggest that such an ideal programme requires, among other necessary conditions, a longer school day and year than we now have.

Wherein lies the pedagogical power of practices in vocational education? I do not mean to convey the idea that there is only one best mode! for change, but there do appear to be common elements in programmes that integrate academic and vocational studies. The first of these can be described as teaching and learning in a context (Raizen 1989). Cognitive scientists conclude that a majority of people grasp concepts, abstractions, and principles more thoroughly and with greater lasting effect when theory and application are immediately related. As Grubb (1991, p.9) states:

> The voices of educational critics have been joined by those of cognitive scientists, a loose network of psychologists, anthropologists, sociologists, and students of artificial intelligence. One conclusion from this emerging field is that knowledge (especially expert knowledge) is often specific to a particular activity or area of expertise, and that for most people effective learning requires a context that matters to them.

Clearly, then, integration of academic and vocational studies would appear to call for a shift in instructional practice. The college prep curriculum in the US as well as its watered down version, the 'general track', is conducted mainly in 50 minute periods, each dedicated to a separate discipline. Students are expected to remain immobile at their desks as the teacher deploys his or her tools of lecture, text, blackboard, and chalk. Little effort is made to relate the content of one discipline to another, nor the content of

any discipline to the solution of problems encountered in work, family, or community. Integrated instruction brings in block scheduling, under which students and teachers are together for periods of three or more hours. Classrooms and laboratories are likely to contain tools and other physical objects. These characteristics of integrated instruction are visible and perhaps superficial. Important changes, nevertheless, take place in the ways that teachers and students do their work.

Consider first the work of teachers. As Lortie (1975) told us, teachers in the US work in an extremely isolated fashion. One result is that students are left pretty much on their own to make connections among, and to see the relations between, different subjects. While work outside education becomes increasingly multi-disciplinary, educators still sort themselves out by narrow subject labels. Yet, serious efforts to integrate academic and vocational studies must be based on collaboration among teachers. In schools that appear to have advanced further along the path of integration, National Center for Research in Vocational Education (NCRVE) researchers have observed an important precondition of success, namely, that all or almost all teachers in a school have a single time in the week to meet and work together as a whole school group. Advanced forms of integration afford clear examples of collegial performance: team teaching by academic and vocational faculty, joint design of projects, collaborative efforts in writing problem sets and other instructional materials, and common efforts in designing new forms of student assessment.

The idea of teachers working together is certainly not new. In the late 1950s, the Graduate School of Education at Harvard and the Ford Foundation got together to promote what was seen as a new practice: team teaching in the elementary grades. The idea was that teachers should sort themselves out and concentrate on teaching subjects in which they had some background or special interest, such that all third graders might receive math from a teacher who had a strong feeling for mathematical ideas. Teacher collegiality for present purposes also presupposes a natural division of labour among teachers, but it goes further: in secondary schools and community colleges practising the new vocationalism, teachers would plan for and develop components of the curriculum, outreach activities, and assessment procedures working as a unified team. Not just teaching subjects but the very design of the instructional activities of the school or college would become a team effort of the instructional staff.

Interestingly enough, teacher collegiality has come under study as an important aspect of teachers' professional behaviour quite independently of the integration movement in vocational education. When teacher collegiality is working positively, Little (1987, pp.501-502) reports benefits such as the following:

> One feature of steadily improving schools is that they are organised to influence teaching . . . Teaching in such schools is a public enterprise. The broad values that guide daily decisions, expectations for student learning, ideas about how students learn and what we as a society wish them to learn, the planning and conduct of instruction, recurrent dilemmas in fostering student motivation and judging student progress, the principles for organising life in classrooms — all receive the collective attention, scrutiny, insight and refinement of peers acting as colleagues . . . schools that promote teacher to teacher work tend to be organised to examine and test new ideas, methods and materials. They are adaptable and self-reliant in the face of new demands; they have the necessary organisation to attempt school and classroom innovations that would exhaust the energy, skill, or resources of the individual teacher.

Integration implies, then, changes in the work life of teachers. It also implies changes in the school life of students. As I see it, changes in the school life of students are best described under the general heading of cooperative education. Students spend not an insignificant proportion of school time working in groups, often working on group projects. Here is an example I have witnessed. At Thomas Jefferson High School for Science and Technology in Alexandria, Virginia, I saw a group of six students working in a darkroom on a problem in laser technology. The instructor was not in evidence, though at some point he surely had to help the students set up the experiment. The students were clearly engaged and closely involved in their work. As they watched the laser beams go through their gyrations, they quietly posed a steady stream of questions to each other. At a point, they seemed to reach tentative agreement on how to move the experiment to a higher stage of analysis. I was told that some of the student projects at Thomas Jefferson are related to actual research and development work in the labs of the high-tech firms of Northern Virginia and that student research is an income producer for the school.

Cooperative learning does not imply an absence of competition. Students, after all, need to know how their work compares with the work of their peers. Part of a student's programme at Thomas Jefferson is individualised. Additionally, student teams compete against student teams, either within a given school or between teams from other schools. I was informed that a team from Thomas Jefferson had won a national contest in supercomputing. The prize was a supercomputer to take home to the school. The school won a similar contest a year later and received dedicated use of a supercomputer for a year. For 12 months, one high school, two supercomputers.

Not being a psychologist, I can say nothing about why students may prefer to spend some of their time in school working with each other, rather than

working individually under the direct scrutiny of a teacher. Intuitively, it seems to be a natural kind of preference. Cooperative learning is intended to turn students from passive into active learners, with 'active' meaning having the capacity to learn independently of the instructor. In passive learning, let us say, the student takes notes from the instructor's lecture, receives text assignments from the teacher, and, in general, takes the attitude that learning is fully directed by the teacher and cannot occur in his/her absence. In active learning, students take substantial charge of their own learning processes. I see this result, moving from passive to active learning, as having implications for the workforce. If, as is now said frequently, countries need workforces that are capable of learning on the job over long stretches of time, a passive attitude toward learning is not helpful, to say the least.

In active learning, students should gain confidence that they can learn as members of a group, with or without the presence of a teacher. They should also gain confidence in their capacity to learn using their own individual resources. These skills, I suggest, are important for lifelong learning in the workplace, but there is more. High performance firms expect experienced workers to pass along knowledge about technological processes; that is, firms expect workers to teach each other. In cooperative learning groups, students function both as learners and teachers of each other. Hence, they come to see teaching, as well as learning, as an easy and natural act.

In writing about active learning, and about how the instructor 'fades' as the learning group approaches maturity, Schoenfeld, (1988, pp.12-13) cognitive scientist in the mathematics, science, and technology group at the University of California, Berkeley, has stated:

> I have a sense of what . . . problems will serve as fertile grounds for mathematical exploration . . . It is essential for me to find fertile ground for mathematical exploration . . . it is equally essential for me gradually to remove myself from the process, moving to the side and prompting the group to resolve issues by itself. I remain engaged as a member of the community making sure that mathematical ideas are respected. (Are we really sure? Is there a counter example?) I refrain, however, from pronouncing what is right and what is wrong: I pose the issues and leave it for as long as possible for the class to resolve them . . . The students work in small groups for perhaps half the class. Then we convene as a whole to discuss these problems . . . One day toward the end of the term I had an unavoidable conflict during the first part of the class. I asked a colleague to hand out my problem set; the students could work by themselves for a while and I would join them when I could. Unfortunately, I was detained and only

managed to get free after the class was over. I ran to the room where the class met, arriving 15 minutes after the class should have ended. All the students were still there, still in small groups, still arguing over the problem.

Under the new vocationalism, both secondary and post-secondary institutions would embrace programmes that integrated academic and vocational education. The new vocationalism, moreover, carries additional implications for linking secondary and post-secondary learning together, a topic to which we now turn.

Tech prep

Tech prep means preparation for a technical career. What is the definition of 'technical career'? Technical careers are found in manufacturing, and the persons in them carry such titles as junior engineer, craftsperson, technician, supervisor, and, in smaller firms, production manager. However, there are vast numbers of technical careers in fields other than manufacturing: health, communications, agriculture, construction, the hospitality industry, office occupations, to name a few. Technical careers imply application in work of technological knowledge. The depth of technological knowledge on which such a career is based takes four years of thorough, sequenced instruction to acquire. Tech prep programmes, then, are designed to commence in the student's 11th year of schooling and to end with the award of an associate's degree after two years of community college. (In the US, a community college is a two-year post-secondary institution, ordinarily offering a combination of transfer programmes, i.e. transfer to a four-year institution, vocational education at the level of an associate degree, and short-term vocational training.) Each tech prep programme provides a progression from generic but related instruction in the high school years to ever more specialised and sophisticated instruction throughout the community college years. Each tech prep programme is intended to prepare people for a specific technical career.

A curriculum for a technical occupation is designed from a set of industrial skills standards. In the case of telecommunications technician, for example, the 11th and 12th grades would include courses in mathematics, physics, basics of computer programming, economics, industrial relations, electricity/electronics, graphics, mechanical systems, material science, instrumentation, and hydraulics. The community college courses would offer more advanced study of digital fundamentals and circuits, digital devices and techniques, analog devices and systems, microwave and fibre optics communications, and telecommunications networks and equipment (Hull and Parnell 1991, p.56).

Tech prep programmes intend that the secondary and community college faculties work cooperatively together. They are to share in the design of curricula and the design of assessment procedures. They are expected to engage in team teaching. Depending on availability of space, equipment, and teachers' specialties, a given course may be conducted in the secondary school or in the college; however, in the ordinary case, the more advanced courses would be found in the college. In one important sense, tech prep is distinguished from the college prep, four-year college sequence: many four-year college students in the US graduate from college with degrees in languages, political science, economics, sociology, and history and with only the dimmest sense of what it is they want to do in their work lives; tech prep programmes, on the other hand, are definitely aimed to prepare people for a particular technical career.

Obviously, the establishment of tech prep programmes, if successful, is expected to increase the supply of well trained technicians in the US. Another objective is to provide a well thought out educational structure for students who previously have been prone to wander around in a haphazard mixture of mostly undemanding, and almost totally unrelated, courses. This phenomenon of 'milling around' can be observed both in secondary schools and in community colleges. With respect to the latter, I note than only a very small fraction of community college students attain the associate degree within even four years of their first enrolling in a college. In addition it is sad to observe that community colleges in inner city areas typically have over half of their enrolments in remedial courses. Tech prep, because it displays a closer, more transparent connection between purposeful studying and rewards for studying, can be seen as a partial solution for such problems in American education.

Integration of education and work

Educators, business, and labour are seeking to relate education to work in a myriad of forms. A new programme called youth apprenticeship has received major attention from national political leaders (Jobs for the Future 1990; Hamilton 1990). The programme is almost certain to obtain incentive grants from the federal government in the next administration; indeed, there are now seven bills in Congress to support the establishment of youth apprenticeship schemes.

A prototype youth apprenticeship programme, called Craftsmanship 2000 is under way in Tulsa, Oklahoma. It enrolled its first students early September, 1992. The programme is sponsored by the Metropolitan Tulsa Chamber of Commerce and seven firms, including American Airlines, Webco Industries, and Baker Oil Tools. Four years in length, the programme expects to graduate machinists and engineering technicians.

The curriculum was designed jointly by Tulsa educators and by engineers in the sponsoring companies.

By American standards, the apprentices are expected to make a greater than average commitment of their own time to education and training. The school day is eight hours instead of six, and the school year is 220 days instead of 180. For the current group of 11th graders, all instruction is conducted in the lavishly equipped Tulsa Technology Center (TTC), though it is expected that students in the 13th and 14th years of education will spend part of the day in one of the sponsoring companies. From 8 a.m. until noon, the apprentices receive instruction in math, physics, English, and social studies. At 1 p.m., the apprentices move across the hall to the metalworking lab. In German style, the apprentices begin their practical work with file, vice, callipers, and blueprint, shaping a piece of metal by hand to close tolerances. They proceed then to manual machine tools and from there to production machines. Later, they study the operation and maintenance of a variety of equipment available in the Tulsa Technology Center Lab. The lab work continues until 5 p.m. In my observation, the apprentices work and study in the small group mode. At least in the lab portion of the day, there is integration of academic and vocational learning, but with the instructor more in the role of coach than authoritarian teacher. After completing high school, the students will continue to community college, since this youth apprenticeship programme is in the tech prep mode. A set of contractual relationships between employers and students is in place, specifying curricular content in the school, community college, and (eventually) in the workplace. Each student is assigned a workplace mentor.

The youth apprenticeship programme is incorporated as a non-profit organisation. Under US law, the incorporation allows the apprentices to be classified as employees of the Tulsa Technology Center. The students are paid at the rate of US$7480 in their first year of study; the pledged rate in the fourth year is US$14080. The twice-monthly pay cheques are deposited directly into a bank account that TTC opened in each apprentice's name. Funds for the stipends are paid by the seven sponsoring companies. As employees, the apprentices are subject to drug testing. Three unexcused absences result in dismissal from the programme. The apprentices with whom I met stated very strongly that they intended to have no unexcused absences. The apprentices enter the programme through competitive exams and interviews. As a group, they appear confident that they are being prepared for well paid and interesting work.

What are some of the other forms of integrating education and work? One is called 'career magnet schools'. Typically found in our large cities, these schools offer students a college prep curriculum and, at the same time, practical instruction to enter immediately upon a well paying career (Mitchell *et al.* 1989). These schools have an industrial focus and close

involvement with a local industry. Examples are communications, computer science, electronics, construction trades, fashion design, health professions, transport, and graphic arts. Students attend school for a longer than average day; some of the programmes continue through the summer months. Another approach is the 'academy model'. Academies offer similar programmes to those found in career magnets, but they exist as a school within a school. They are designed especially for at-risk students. Yet another way that the education and work nexus is drawn is to establish enterprises within schools, providing services or products to clients in exchange for money (Stern 1984). This, of course, has been a popular practice in the countries of Eastern Europe, but in the US students typically have a great deal more to say about the nature of the enterprise, its services or products, and about how the enterprise is run than do their Eastern European counterparts.

Yet another variant is found in the concept of teaching 'all aspects of an industry'. The Carl D. Perkins Vocational and Applied Technology Act of 1990 (Section 113 (3) (B) (i)) defines teaching all aspects of an industry as follows:

> . . . strong experience in an understanding of all aspects of the industry the students are preparing to enter (including planning, management, finances, technical and production skills, underlying principles of technology, labor and community issues, and health, safety, and environmental issues.

The 'all aspects of the industry' approach appears to have at least three valuable contributions to make. First, all aspects of the industry offer a thorough kind of education for entrepreneurship. Good knowledge of planning, management, finances, and underlying principles of technology, as well as knowledge of health and safety issues, would seem to be crucial in the launching of new firms. Given the lack of job opportunities in many central city areas, job creation through the start-up of new, locally owned businesses would appear to be a key element of urban revival. Second, instruction in all aspects of the industry helps students understand the social significance of their future occupations and the contributions they as future workers will make to the welfare of the nation. In Germany, study of all aspects of the industry is a regular feature of workforce preparation. One may surmise that the generally high morale of the German workforce is related to the esteem in which workers hold their jobs. Third, education in all aspects of the industry should allow American employers to benefit, to a greater degree than they do presently, from responsible worker initiated proposals for productivity gains.

Whence comes pressure to create a closer connection between education and work? First, such a connection can help students sense a purpose in their

lives or establish what we at NCRVE call a career identity. Counsellors have become rare in American schools and many counsellors have little to say to students beyond describing entrance requirements of four-year colleges. Urbanisation and industrialisation have made the nature of different kinds of work invisible to most young people. The education-work connection should help reduce the students' information deficit in a variety of ways. Second, some teachers have their own kinds of information deficits, one of which is awareness of how much and what kinds of math and science students need to be successful in a high performance workplace. The states do very little to encourage educators to keep up to date with regard to industrial skills standards. Given these conditions, teachers and students combine to accept expectations of student performance that have become inappropriately low.

Third, a school connection with a respected employer gives status to vocational education, and vocational education very much needs a higher social regard. In the youth apprenticeship programme I described above, the sponsoring companies, all well regarded, invite apprentices and their parents to company picnics. Fourth, industrial connections increase opportunities for students to sense that they are receiving 'just in time' education and training. When theory in today's class helps solve a problem in today's practical assignment, the learning effects can be powerful. Fifth, information flow need not always be from the industry to the school. In some cases, community colleges, for example, can provide technical assistance to small and medium sized firms in the area. Thus, the school industrial connection moves beyond training to productivity enhancement and job creation (Rosenfeld 1992). Lastly on my list, in youth apprenticeship schemes, wherein students must acquire an employer as sponsor, there is a degree of regulation of skills supply to skills demand.

These are what I see as important elements of the new vocationalism. Let us now consider some points with regard to its context.

Roots of dissatisfaction with existing educational practices

There is a mounting sense of unease in America about the state of the American economy. There is a loss in confidence in the future, even a sense that the social contract has been broken. Recession or no, many Americans feel that life will not be as good as they have known before, or as they had come to believe it should be, because a fundamental change has occurred in the economy. To a considerable extent, that change is most apparent in the manufacturing sector. As a percentage of GDP, manufacturing is relatively constant. As a supplier of high wage jobs to the middle skilled,

manufacturing has been downsized significantly, which is to say that output per worker has gone up substantially. Displaced manufacturing workers are more or less forced to look for work in the service sector where, except for managers and professional persons, wages are low.

At the same time and as part of the same set of structural changes, competitive pressures demand that companies meet higher standards of quality, offer a dazzling variety of output, shorten production cycles, minimise working inventories, and be environmentally pure. The remaining high wage jobs, generally speaking, are more skill intensive. As the US Department of Labor states (1992, p.3):

> The kinds of skills people need to have—even if they hold the same job as before — have changed in the direction of higher skills, and more of them. The competitive workplace of today—regardless of the product or service—is a high skill environment designed around technology and people who are technically competent. Assembly line workers must now understand their work as part of a much larger whole. Many workers must be comfortable with computer numerically controlled equipment. Front line supervisors must confront tasks like budgeting and fiscal planning; clerical and other support personnel must handle complex word processing and spreadsheet functions. Relatively few of these workers are likely to have graduated from college, while not long ago most of these skills would have been demanded only of the college educated.

During the 1950s and into the 1960s, assembly line work, quickly learned and intellectually undemanding, paid sufficiently for a single worker to support a family in American middle class style. Today, the middle class is subject to income polarisation. The well educated, high skills equipped part enjoys substantial gains in income. (These gains are 'on the average', because even the educationally privileged have lost positions through downsizing of firms; members of the upper middle class have lost their former sense of job security.) More distressingly, less educated members of the middle class are sinking into a state where all adult and near-adult persons in a family work long hours for a survival wage, trying to hold two and sometimes three jobs to keep the family afloat.

Are there connections between these economic shifts and the American educational system? Do the changes in the economy breed dissatisfaction with the operations of the educational system? Let us look at the question first from the point of view of the individual worker. If it was possible until recently to live well without much education, provided one was willing to work hard at an intellectually undemanding job, and if now living well and comfortably requires education and training, the question naturally arises,

with ever stronger force, as to whether the distribution of educational opportunities is equitable? Equity in educational opportunities has become more important to most people, because the survival of their families now depends on educational status.

No one can deny that there are great educational disparities in schooling in the US, mainly to the favour of the affluent household. Affluent families are likely to feel that the good education they have received, and that their children receive, is their due, because of the contributions their heads of household make to the society and because of the discipline they exercise within their families. People without privilege, generally speaking, obtain education for their children that is inferior, even with regard to the functional forms of schooling (Kozol 1991). Their children, alas, have to compete in the same national and regional labour markets that affluent youth enter with relative ease. Up to now, I suggest that both rich and poor families, nevertheless, are more likely to blame a failing student than a failing school.

Given the economic changes that relate earnings more strictly to education-based skills, and given disparities in educational opportunity, the clear prospect is large scale growth in a permanent underclass. This is not what the US is supposed to be about. The more immediate connection to the topic of this paper I would put as follows. Suppose that schools and colleges attended by lower income people are poorly financed (mostly they are), and suppose some more dollar resources became available. Imagine that nothing changes in the formerly underfinanced schools and colleges other than that teachers have marginally higher salaries, classes are marginally smaller, and textbooks are more up to date. Would these actions rectify the problem of inadequate access to learning? I think not. Now suppose that some extra money is available, sufficient to introduce the new vocationalism, as described above. Would this set of changes increase access of educationally underserved persons to theoretical knowledge and higher order work skills? I do not think anyone knows. Fragmentary evaluations are positive, as I shall note, but the record is incomplete. As is true of educational reforms so often, we need a leap of faith to discover the answer.

Let us now consider the relation, if any, between economic change and the educational system from the point of view of the employer. A minority of employers, employers in what we call high performance workplaces, are indicating that they need a more intellectually prepared workforce and a smaller minority of employers are actually taking steps to bring the new vocationalism into being. But the essential question is this: if education reform serves to increase largely the number of intellectually adept, well prepared workers, will jobs at high wages be available to these graduates? I do not think anyone has a very clear answer to this question either. The researchers with whom I have worked generally have held that education is

a weak reed for job creation, outside the educational system itself. However, they may be wrong, and economic systems do change. Possibly a poorly prepared workforce has become a bottleneck in the expansion of the US economy at this time.

Evaluation of the new vocationalism: does it work?

Evaluation of educational innovations is, in my opinion, a devilishly difficult task. The opportunities for carefully designed experiments are rare, and even rarer are experiments with random assignments of participants and members of control groups. If we had closely watched experiments and random assignment, we might have a chance to build a set of robust propositions about education production functions, but mainly we do not. A further difficulty in evaluating innovations is that innovations most often come in packages, several new practices being introduced at the same time. Ideally, we would be able to look at the parts of the innovation package separately to see which parts are powerful in raising student performance, which parts are neutral or redundant, and which parts are working with negative effect. The setting in which a particular package of innovations is placed may exert its own effect. For example, if career magnet schools appear to raise student achievement, does the gain stem from contextual teaching/learning, cooperative learning, and other components of the new vocationalism—or does the gain in achievement arise from the facts that the given school is a safe place, that teachers appear to care about their students, and that students attend school outside their possibly disruptive home neighbourhoods? An additional problem is that there are few recognised tests of the skills and competencies that the new vocationalism seeks to impart, beyond standard academic achievement tests.

In spite of all this, we do have fragmentary results to report. The California academies—schools within schools with an occupational focus—have been carefully evaluated (Stern *et al.* 1992). These institutions are intended to serve at-risk students, and their objectives are specifically directed toward preventing dropping out as well as encouraging students to enter further education and establish the basis for a career. Based on a longitudinal study of students' progress, the academies are deemed to be achieving the goals set of them. In a second instance, 30 secondary schools in the southeastern US are in a consortium sponsored by the Southern Regional Education Board to practise the integration of academic and vocational studies. These schools, some more impressively than others, report higher than expected gains in achievement of their students, underscored by students' enrolling themselves in academically more difficult college prep courses, rather than in the courses of the ill-famed general track. To this time, these results must be tempered by a lack of assurance that the results are free of selectivity bias.

Robert Crain, *et al.* of NCRVE have been assessing the academic performance of students in New York City's career magnet schools, using an approximation of a random assignment study. New York offers its eighth grade graduates a great deal of choice about which secondary school they shall attend. Over 80 per cent of eighth graders enter a lottery for selection into schools of their choice. It is thus possible to compare achievements of groups of students who win the lottery and enter a career magnet school with those who lose the lottery and go to their ordinary neighbourhood secondary school. The career magnets, as I noted above, are full day schools offering the college prep curriculum and career preparation, with focus on a particular industry. By observation, these schools display aspects of the new vocationalism.

Crain's results (1992, p. 29) for ninth grade students, in brief summary, are the following:

> Many of the effects of the career magnet programs should be considered large . . . we would estimate that the low readers who applied to, but were not accepted by the magnets, are two to four times more likely to drop out or disappear from the New York City public school system between the eight and ninth grades than those who did receive offers. In . . . magnets, a low reader is two to four times as likely to pass Regents math than he would be if he were in a comprehensive school. Average readers in magnet schools . . . increase their reading skills at a rate at least half again faster (perhaps twice as fast) than they would in regular schools. The average readers . . . earn one fourth more course credits than the average student in regular schools. This considerably increases their chances of getting a high school diploma, since lack of credits is the main reason students drop out.

The Crain statistical study of New York City magnet schools was followed by an ethnographic study of students and teachers in magnet and comprehensive high schools (Heebner *et al.* 1992, pp. 87-88). Seventy students and 62 teachers and staff in four schools were interviewed at length. Here are three main findings from the ethnographic study.

First:

> Career magnets foster an optimistic future orientation among students. In contrast to the comprehensive schools (where many students were vague about their futures and unable to present a clear plan for their lives), the students in the career magnets were both more optimistic and more articulate . . . The career magnet students described more detailed plans for the future—often with an optimistic tone and an air of thoughtfulness—than most of the comprehensive students we interviewed.

Second:

> . . . students at career magnets develop multiple strategies for mixing future work and education (i.e. parallel career planning). Students seem to have solved for themselves the problem of avoiding choice between a vocational education and an academic college preparatory education. In many cases, students obtained a career related education but refused to give up their grand plan for college education. Instead, they saw the career training they were receiving as providing entry level skills that could be used to earn money for college or to fall back upon in the event that college did not work out. The students' confidence that there was a possible entry level position that they could enter after high school increased their sense of economic security enough to allow them to think more clearly about the benefits of going to college. Although the data cannot test the hypothesis, we are left to speculate that the training of students for entry level positions may increase (rather than decrease) their likelihood of choosing to go to college.

Third:

> . . . students at the career magnets learn about values and social skills associated with work and benefit from their new school peer groups. Midway through the interview study, the interviewers noticed that the career magnet students, even those from disadvantaged backgrounds, displayed respect for cooperation, commitment, and other work related values. This tendency was less pronounced (and sometimes entirely absent) in the interviews with disadvantaged students from comprehensive high schools.

While they are by no means conclusive, I suggest that these fragmentary findings constitute a basis for admitting the new vocationalism into the inner circle of major education reform proposals in the US. If it were adopted on a broader scale, especially in major urban areas, we could benefit from a fair test of the three integrations that the new vocationalism embraces.

Problems in the implementation of the new vocationalism

Establishing the new vocationalism in the US is not an easy task. Let us consider problems of implementation under four headings as related to schools and community colleges, universities, state governments, and employers and labour.

Impediments in the school and community college setting

Let us consider secondary schools first. Teachers have attitudes and so do principals and central office administrators. Integration of academic and vocational studies takes its impetus primarily from federal legislation on vocational education, the Perkins Act of 1990, even though the fundamental ideas reach back to Dewey and Whitehead (Dewey 1920; Whitehead 1929). Such a fountainhead of change, i.e. the federal legislation, implies that vocational teachers can and will take the lead in establishing integration, but vocational teachers are a minority in most secondary schools and their numbers are falling (US Department of Education 1992). (When vocational teachers retire, they are most often not replaced.) With notable exceptions, vocational teachers are not honoured in the educational community. By observation, some academic teachers are strongly opposed to the spread of integrated programmes, seeing the college prep curriculum as the only worthy form of instruction for all students.

A not very strong minority of teachers, then, must somehow gain the support of site and district administrators for making major changes. Master schedules must be modified in important ways and teachers need to be granted release time in common for planning new programmes. These changes require the concurrence of administrative officers. Another obstacle to implementation of the new vocationalism is parental attitudes. Many parents see any secondary programme with the words 'vocational education' as an insidious device to track their children into a lifetime of low wage work. Most secondary schools have insufficient counselling expertise, outside counselling for college entrance, to persuade parents that the new vocationalism should offer greater, not fewer, opportunities to their children.

The physical structure of secondary schools is not conducive to the kinds of small group, large group instruction upon which the new vocationalism depends. NCRVE has sponsored the preparation of architectural drawings for a 1600 student secondary school that provides appropriate allocations of space for small group, large group activity, along with multi-purpose labs, computer stations, spaces for display of student work, etc.—but no conventional classrooms (Copa *et al.* 1992)! Even if construction of such schools appealed to local boards, their appearance and use lies considerably in the future. Overlying the whole secondary scene is a reward structure for teachers and administrators that offers few positive incentives for change.

In community colleges, I would suggest that conditions are more favourable for implementation of the new vocationalism. Vocational teachers, as compared with those in transfer programmes, are often in the majority and many vocational teachers are highly respected. There is flexibility in deployment of student and faculty time that secondary schools lack. The equipment for applied studies is available in more generous measure.

Parental opposition to vocational education at the post-secondary level is not ordinarily a serious problem. Community college teachers and administrators have an incentive to pursue the three integrations, because their successful implementation offers the hope of more and better prepared students attending their colleges. Consequently, some observers, including me, expect the leadership for implementation of the new vocationalism to come primarily from the colleges, rather than from the secondary schools directly.

Problems of implementation from the university sector

It might appear that universities have rather little to do with putting the new vocationalism in place, but this is not so. Universities, and particularly what we call state universities, are our primary suppliers of teacher training, both pre-service and in-service. So far, state universities have shown little interest in preparing a cadre of teachers with skills in integrating academic and vocational knowledge or with skills in building bridges to the world of work. The elite universities, most of them anyway, have graduate schools of education. These institutions prepare few teachers but lots of PhDs. Most of the elite branch of our university system do not recognise vocational education as a legitimate topic of inquiry. This attitude is something that we at NCRVE have been trying to change. The elite universities provide leadership in settling educational priorities and policy; it is therefore imperative that they come to take an interest in the new vocationalism if the set of practices it embodies is to gain a fair test.

There is another way that the universities affect the new vocationalism. Many integrated programmes are designed to offer graduates an opportunity to study in a four-year college programme as well as to step up on a career ladder. This dual opportunity would be more real if university admissions officers were willing to credit secondary and community colleges courses in applied academics, courses that combine math, science, and technology; for example, willing to give credit for such courses as meeting the specific requirements of college and university admission.

State government policy and the new vocationalism

Each of our states has a chief state school officer. These persons as a group are represented in Washington by an influential organisation, the Council of Chief State School Officers (CCSSO). The introduction to the 1991 policy statement of CCSSO provides the following statement (p. 1):

> For 1991, the Council of Chief State School Officers' priority is 'Connecting School and Employment'. The goal is to improve education and experiences that bridge youth and adulthood and prepare American youth for immediate or eventual productive

> employed careers. We support changes in schools that promote a quality primary and secondary education with early orientation to work that enables all young people to pursue continued education and challenging employment. We envision broad curriculum changes that integrate learning in the classroom and learning through experience in the workplace. We advocate major modifications in how instruction is organised and provided in both academic and vocational education curriculums. We propose the expanded use of proven structures to introduce and develop the skills, knowledge and behaviour youth will need in their adult years. These structures include cooperative education, 'tech prep', youth apprenticeship, mentoring and service learning. Finally, we advocate a shared responsibility among schools, employers, and employee organisations in bringing about these changes.

Some states, including Oregon, Arkansas, and Oklahoma, have moved strongly toward meeting the objectives of CCSSO's 1991 policy statement. In many other states, progress toward the new vocationalism remains at a glacial pace. One difficulty the states face is that the changes proposed require some amount of additional resources, at least to get things started. Some of the larger states that earlier have offered national leadership in educational policy are extremely strapped for public resources.

In the US, with the notable exceptions of health professions, occupations and cosmetology, there is little relation between the development of industry skills standards, on the one hand, and the content and assessment of education training programmes, on the other. In my view, this gap, or void, between standards and instruction is responsible for much of the unevenness of quality in education and training we witness in our country. It may also account for the low esteem held for education and training programmes outside the college prep, four-year college route to work. It would be helpful, I suggest, if the state government would mandate the incorporation of industry skills standards into their human resource development programmes, as found in their schools and colleges. A prior step might be development of national consensus on the content of industrial skills standards in major occupations.

The role of employers and labour

Integration of education and work cannot go forward unless employers are eager to work with schools and colleges. The employers' responsibility in the new vocationalism is to establish high quality training programmes in the workplace in which students may participate. Such programmes, among other features, will have an orderly sequence of learning tasks and a mentor for each student. The evidence so far is that most employers have little concern about the quality of their workforces or, if they do, fail to perceive a

solution to their problems in establishing cooperative relationships with schools and colleges. As the US Department of Labor stated (1992 p. 17):

> But if States appear to be behind in the race for economic development, the private sector has barely entered the starting gate. While companies in different states were generally aware of the economic changes and their impact on labor markets and skill levels, very few companies have committed themselves to action. Perhaps the most surprising finding in (this) research is that international competition is not viewed as a serious threat to future growth. International competition is of little concern to employers and ranked last on their list of serious problems for business growth.

It would be excellent if workers contributed their experience and knowledge in the formation of industry skill standards and in the process of reviewing work processes to achieve higher productivity. Contact with workers in Europe is made primarily through union channels. In the US, the proportion of organised workers outside the public sector is now well below 20 per cent. This makes it difficult to set up tripartite councils representing employers, labour, and education.

These, then, are some of the impediments that implementation of the new vocationalism faces. Will they be overcome? That is the topic of the last section of this paper.

The outlook for the new vocationalism in the US

The hurdles or barriers that face the new vocationalism are high, but change is in the air. A series of powerful reports has turned the attention of the country's leadership away from thinking of educational reform solely as a movement to strengthen the college preparatory track toward the objective of dealing with problems of education and training for the workforce. These include *Workforce 2000: Work and Workers for the 21st Century* (1987); *The Forgotten Half: Pathways to Success for America's Youth and Young Families* (1988); *America's Choice: High Skills or Low Wages!* (1990); and the report of the Secretary of Labor's Commission on *Achieving Necessary Skills, What Work Requires of Schools* (1991). The change in emphasis has been accompanied by a result highly unusual in Washington, namely, that federal departments (ministries in other countries) are working in a cooperative and coordinated fashion to try to raise standards of education and training for work. The Labor and Education departments have a joint initiative on voluntary industry-based skills standards and certifications. All major departments, except Treasury are collaborating with the Executive Branch to improve instruction in mathematics and science, beginning in the early grades of

schooling. It is almost certain that the next Congress will pass an Act authorising incentive grants for youth apprenticeships. One may also reasonably expect 'play or pay' legislation to stimulate work-based training and eduction even more broadly. The American Association of Community Colleges is in very strong support of tech prep programmes. These are some of the developments at the federal level of government.

At the state level of government, there are likewise attempts to promote action by the leadership cadre. As I noted, the Council of Chief State School Officers has taken a position supporting work-related education. The National Governors Association has adopted a similar set of positions. The southeastern and border states operate a consortium of secondary schools practising integration of academic and vocational studies under the auspices of the Southern Regional Education Board.

Local interest and action is reflected in drawing up and implementing plans for the three integrations: this work is in the hands of school and college staff, chiefly in urban areas. These activities are stimulated in part by summer institutes held for teachers and local administrators by such organisations as Jobs for the Future, Center for Law and Education, National Alliance for Restructuring Education, REAL Enterprises (a rural consortium), Southern Regional Education Board, and our own NCRVE. All told, the summer programmes involve several thousand school staff. They are exciting events to witness. The engagement of teachers may reflect the vitality of the ideas that have now come under practical consideration. It is our hope that we may see the emergence of a network of teachers and administrators dedicated to the enactment of the new vocationalism.

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2 Learning within a work context: training concepts, experience, developments

Ute Laur-Ernst

On the increasing significance of learning at work

The debate on the 'dual system' of vocational training as practised in Germany (i.e. two training venues: company and school) has taken on board a number of important additional considerations in recent years, considerations which stem from three very different problem areas.

Firstly, recognition of vocational and general education as equivalents has become a pressing objective. The recently renewed interest was sparked off by a noticeable fallback in the attractiveness of a dual training. Over the past few years we have seen a marked decline in the demand for traineeships, especially in craft occupations. A 'meritocratic' orientation is pronounced among the younger generation. This means that a growing percentage of young people are opting for continuing their general education and an academic vocational training, this because in Germany such a background still promises substantial social privileges and favourable career and lifestyle prospects which are largely denied to those whose training was based on the dual system. Many a youngster who successfully completes a traineeship finishes up in an occupational dead end. As a result, more and more young people are turning their backs on this type of training. If, however, the attractiveness of such traineeships is to be maintained or even raised [1]—and this would be of general societal interest in view of the demand for skilled labour—these traineeships must offer prospects which are comparable to those open to persons with a general and academic educational background.

Secondly, vocational training is becoming increasingly internationalised. In Europe, especially in the West European states of the European Community, the creation of a single market is bringing with it a transnational European labour market. Together, these markets are having considerable implications for vocational training insofar as vocational training is now the decisive factor determining an individual's prospects on this European labour market. Accordingly, we are studying the vocational training systems of our

European neighbours, their organisational formats and the methodologies, objectives and contents of their vocational training. We are asking each other about the functionality and efficiency of the options adopted in order to arrive at conclusions for our own training system. We are participating in European programmes and Community initiatives on vocational training in order to exchange ideas, experience and know-how. For us and our partners, this provides new ways of approaching issues and new initiatives. The stronger interlinkage between school-based instruction and learning within a work context is playing a major role in the discussion at European level. Many countries are increasingly recognising the advantages of learning close to the workplace.

Thirdly, industry, an important partner and the main pillar of the German dual system, needs skilled workers. Some branches are already showing a noticeable shortage which will become greater as a result of Germany's present demographic trend (low birth rate) and the already mentioned preference for other education and training tracks. The business community is responding on the one hand with technological and organisational rationalisation but on the other hand with a recognition of the need to develop human resources. Only thus is it possible to arrive at efficient, flexible and innovative process and product design—irrespective of whether we are looking at the manufacture of automobiles, furniture or foodstuffs or at providing creative and social services.

In Germany, three changes are taking place simultaneously, especially in large companies:

- Training, hitherto regarded by many economists as a non-productive, cost-generating factor, is increasingly being understood as an integral part of macro-corporate human resource and organisational development. It is thus acquiring a new, more elevated status within the spectrum of corporate functions.
- As a result, vocational training is increasingly being subjected to control and listed as a profit centre.[2] This makes new demands on the design of initial and continuing training.
- Parallel to this there is evidence that education and training measures are being 'transported' back to the real-life work context. That which was the salient feature of the dual system and which was virtually always practised in the craft sector and in small and medium companies—namely, learning during and through concrete work assignments—has played a fast dwindling role in many larger companies over the past decade. Initial and continuing training (especially in technico-industrial occupations) is usually provided in separate divisions, in training centres and special training workshops which are far removed—in terms of both distance and substantive content—from the work process taking place within the company. Only for relatively brief periods of practical training does the trainee go into

the real production arena to gather experience. And a learner in a continuing training measure has to personally apply the knowledge and skills acquired in an abstract and generic manner in an external seminar to the concrete problems encountered at his or her own workplace.

Many companies are now determined to make changes. Recognising and making full use of the learning potential inherent in work is being placed at the forefront of corporate training policies.

If we summarise these three developments:

- assuring equivalence for vocational training within the dual system;
- Europeanisation of vocational training, together with the tendency to emphasise the importance of learning within a real-life work context;
- change in the function of in-company training to become a point of departure for and component of organisational development;

we can perceive a renewed increase in the importance of learning within the work context. This confronts the scientific community and practitioners alike with new problems, for the conventional formats for learning at the workplace are not capable of meeting current and future corporate needs. The Federal Institute of Vocational Training (BIBB) is running research and development projects and also pilot schemes to identify innovative responses to this problem. First and foremost these projects are addressing the questions as to which skills are particularly in need of being learned at the workplace.

Skill targets for learning by working

Which abilities can be developed only during the normal work process as opposed to in a training centre, at school or at a seminar? Has the workplace not long been harshly criticised and rejected as a learning venue because it did not provide the right circumstances for vocational learning and personality development? Has Taylorism already been banned from the shop floor, have new, more holistic forms of work already been introduced to the extent that one can recommend learning at the workplace with a clear conscience? This is undoubtedly not the case for the mainstream: Taylorist structures are still frequently to be found. On the other hand, there is evidence of some interesting changes in work organisation which are heading towards a holistic, interdisciplinary, and cooperative approach to work. An appropriate approach to vocational training could have the effect of supporting these developments.

On the other hand we must acknowledge that Germany, for example, has had several generations of trainees who have turned out to be good skilled workers after having had only a relatively small element of practical work in

their training. Other countries with exclusively school-based vocational training systems have likewise produced skilled workers who are undoubtedly equally capable of good workmanship. What, then, is inducing employers in Germany to opt so heavily for the shop floor as a learning venue?

Is it primarily an effort to cut down their spending on initial and continuing training? Is it a matter of assuring themselves of a future workforce composed of people who become part of the company at an early age? Is the decisive factor the more rapid deployability of someone who has been trained within the production process, or is the philosophy of 'genuine personality development through work' now prevailing as an alternative to the humanistic interpretation of education?

Undoubtedly all these considerations have a role to play in this new way of thinking. Quite apart from the macrosocial responsibility which companies have agreed to shoulder with regard to the dual system, they also have their own vested interest in fulfilling their training mandate. The cost factor is undoubtedly exerting a strong influence at the present time because of the world-wide recession. But alongside that consideration there are important reasons relating to job content and skills requirements for consciously looking again at the work process as an arena for learning.

Modern management concepts and objectives are confronting the workforce at all levels with new challenges: what is expected is high flexibility, immaculate product or service quality, a shortened production process ('lean production', 'just-in-time production') an increase in the pace of innovation, a pronounced customer orientation, expectations which call for complex abilities on the part of the skilled worker which extend beyond the key skills conventionally accepted and produced today. Holistic, dynamic management concepts set out to enable each individual, at his or her own level, to:

- handle complex, indeterminate situations to which no rules apply; such situations develop, for example, when a complicated production system breaks down, during a client counselling session, or when a new technology is being introduced;
- recognise his or her own innovation potentials and make use of these as the problem or situation at hand requires; imagination, improvisation and creativity in solving problems are faculties which are in demand; skilled workers' ideas and experience should be put to better use than has been the case in the past ('quality circles');
- react quickly to changes in tasks, restructuring measures, new types of process design, etc. and adapt or develop their own competence as required; it is expected that the worker will embark on a self-managed learning process;

- identify scope for action, seize such opportunities to act in the interest of achieving corporate goals, and also contribute responsibly towards constantly upgrading and improving the products or services offered by the company and the process whereby they are produced; the skilled worker's action radius is widening considerably.

If one looks at this set of new requirements, it becomes eminently clear that at skilled worker level too, working life claims the entire personality, not the individual merely as the holder and supplier of a select set of specific, objectivised skills. Vocational training which conforms with such modern management concepts and is a component of human resource and organisational development has to set its training targets from a more comprehensive viewpoint to take account of both personality development capabilities and the complexity of large-scale production operations. This applies not only to large companies: vocational training in a small craft company or in a medium-sized service company must be aimed in the same way if its skilled workers are expected to do more than carry out predetermined work assignments in a single-minded, mechanical fashion, are expected to take due account of what is happening in their surroundings and themselves become well fitting parts of the corporate system as a whole.

These comprehensive skills can be broken down into a set of intellectual, social and emotional components. These, however, must not be regarded as isolated learning sub-goals which can be tackled one after the other; indeed, special attention must be given to their interaction.[3] Nor can they be developed in an abstract manner, i.e. in isolation from corporate operations. The corporate context affords them concrete form and a quality of their own. For example, what is involved in coping competently and spontaneously with unforeseen, open situations differs quite substantially depending on the nature of the situation to be confronted. A difficult case in client counselling, for example, will require knowledge and skills which are quite different from those required by a sudden breakdown in a flexible manufacturing system. And precisely because no fixed rules and regulations exist for coping with these situations and because experience and intuition are called for, the corresponding skills cannot be practised at just any place of learning. The contest to which these comprehensive skills refer is always the product of the interactions between and among various company-specific factors, the main ones being:

- the company's operations and objectives;
- the technologies used and the preferred working methodologies or processes;
- the structure and organisation of the work;
- the hierarchical structure and the management style practised;
- the extent of the company's internal and external integration;
- the skill structure of the workforce as a whole.

All these factors are additionally fashioned by the corporate philosophy, the thinking and conduct of the management.[5] How, then, can this type of learning, integrated as it is in the corporate context, be organised at the practical level? What approaches exist and what experience has been gained therewith?

New organisational formats for in-company learning

The simplest and most widespread form of learning is a matter of allowing the trainee to join in the work process. He is posted to a workplace which is in line with his abilities or accompanies a master craftsman carrying out a job assignment. The trainee carries out any sub-task assigned to him, though this is not associated with any broader training intention. The main consideration here is one of applying work procedures, and practising and consolidating skills and specific, clearly delimited abilities. This work-related type of learning can indeed justify its existence, but it becomes problematic when the learning potential inherent in the assigned activities is too limited and one-sided or when it offers the trainee no benefit because of the standard he or she has already reached. Numerous studies have drawn attention to the shortcomings and restrictiveness of such an approach to training at the workplace.

The new organisational models developed over the past few years by large companies and tested in pilot projects extend well beyond the traditional formats for learning at the workplace. They are combinations of different types of workplace-related learning[6], and learning in conventional corporate training centres, i.e. in the training workshop or the seminar and teaching rooms of the training division. These new, now tested workplace-related learning venues include the so-called learning islands, learning stations, technology centres, learning factories, application workshop and the 'company task circle'. Creating such new learning venues presupposes considerable investments and is to some extent associated with changes to the existing production and work processes. Linking them with each other and with the company's conventional learning venues calls for the development of a differentiated overall training concept to govern both the curriculum and the organisational arrangements, and implementing this in practice in turn calls for a high degree of coordination among all parties involved.

In the pilot project being run by Mercedes Benz AG in Gaggenau, for example, 'learning islands' have been set up at various points in the real-life automobile production and assembly process, the points selected being those which concern important skills and have the highest learning impact

potential. At the learning islands, mixed teams of trainees training for different occupations learn and work together in the same way as semi-autonomous working groups in a 'normal' production process. Additional aids and learning media are made available to the trainees, and a particularly competent skilled worker from the shop floor with an additional training qualification monitors this integrated learning and work process.

These learning islands are simultaneously used as experimentation areas for new forms of work organisation and group work. They serve to try out new approaches which are subsequently to be introduced on a larger scale in the corresponding department. The learning island concept is thus a practical example of linking vocational training with organisational development.

This holistic, self-reliant and cooperative 'learning work' at the island is supplemented with further forms of learning: project work in the training workshop, activities relating to the production process in the 'application workshop' and individual and collective assignments in 'normal' production operations. These different learning situations have to be harmonised in terms of their training content and methodology.

Similarly complex is the 'technology centre' model (Volkswagen AG, Kassel). The technology centres are venues for initial and continuing training which refers to production operations as such and the proper use of means of production. They are linked with the production process from the spatial and organisational viewpoints. The learning which takes place there is thus not fully integrated into the actual work process as is the case in the learning islands, but it is nevertheless closely associated therewith. The technology centre familiarises the trainee with the structure and complexity of the production process, and the trainee thereby develops occupation-specific and interdisciplinary skills with a direct relevance to the work process. The technology centre as a learning venue is integrated into an overall corporate vocational training system. The learning which takes place there is linked with that which takes place in the training workshops and teaching rooms, in specialised workshops in operational divisions, and during the production process itself.

In our own research and development project to promote 'systems thinking and interrelational understanding', which we conducted in association with several relatively small and some large manufacturers in the metalworking and electrical engineering industries, the approach adopted was less ambitious. We deliberately decided against setting up special establishments and avoided any undue organisational upheaval to accommodate the training as this would have been beyond the capabilities of many companies. In our concept:

- The company is perceived as an exploration area which trainees enter equipped with their own hypotheses concerning what they need to know and thus, during the three years of their traineeship, they successively find out about real-life conditions within the company. It is important that these explorations should be embarked on from the viewpoint of the occupation envisaged and subsequent field of work (and not from that of any one specific workplace), so that the information which they gather and the experience they gain are seen to be relevant to their actions; trainees are expected to apply this self-acquired knowledge to job assignments.
- The company is perceived as a complex, professional learning area within which trainees are expected to avail themselves of the professional expertise of the relevant operational division in order to carry out the tasks assigned to them. In concrete terms this means: during the project work organised by the training workshop, for example, to solve a set problem trainees are expected to consult an experienced skilled worker, the leading hand, or the head of department to seek their advice, become familiar with their way of working, discuss their own ideas for solving the problem and acquire in situ work experience.
- The company is perceived as a modifiable, dynamic construct to which trainees can contribute their own ideas and initiative. For this trainees have to learn that change involves complex processes which generally have an impact on various other fields and calls for consideration of more than any single aspect. The investment in the change has to be proportionate to the benefit to be obtained therefrom. Only if trainees have a broad-based understanding of the work process and can recognise the main 'system links' can they develop and at least launch some interesting and practicable ideas and proposals of their own.

It is always astonishing to see how innovative trainees can be if they are given the opportunity to constructively scrutinise corporate structures, procedures, and instruments. This potential—in the same way as that of the skilled workforce in general—could be much more highly developed and utilised than has hitherto been the case.

By integrating the company in its roles as an exploration area, a professional learning area and a modifiable construct, the concept which we developed jointly with the companies concerned sets out to give in-company vocational training some new contours and structures. Although the initiative is always taken by the initial and continuing training division, the planned changes have to be coordinated at an early point in time with the relevant operational divisions and the personnel and organisation divisions, as such a training concept can be implemented only on the basis of cooperation between all parties concerned. This approach conforms with the general trend towards integrating initial and continuing training more closely within

corporate operations as a whole, thus bringing it back out of the isolated position it has so often held in the past.

Didactic and methodological considerations

From the viewpoint of social psychology and the psychology of learning, training within a real-life work context has a number of advantages: the motivation to learn is usually greater and more consistent; the trainee's self-esteem is heightened if he or she can carry out useful activities; it can mitigate the 'school fatigue' found among many young people, which tends to recur if an in-company traineeship has little practical content; and the learning and experience potential offered by a company is greater—provided of course that the training takes place at suitable workplaces and that the primary goal is to develop a competence which will be of relevance in the future.

These advantages must be seized for didactic purposes and integrated into corresponding training concepts. There is broad consensus that the aim here should be to secure a combination of different in-company learning venues. The total return of training operations into regular corporate operations would be out of the question for large companies and also for many medium-sized companies. The craft sector and small companies, by contrast, will generally remain by their practice of concentrating training within the work process. Within the framework of the dual system however, the learning is always supplemented by instruction at a vocational school and courses held in multi-company training centres. Accordingly, Germany has no vocational training which is one-sided and restricted to any single learning venue.

It one studies the discussion on the didactics of in-company learning, a number of guidelines emerge for designing learning situations which are oriented towards the following sets of opposites:

- Proximity and distance: learners are immersed in real-life operations; they are directly involved in the technical and social processes taking place within the company; they perceive themselves within this interrelational context. But they also need distance to appreciate the overall perspective, to find their bearings, to position themselves and their own work within the overall process.
- Concreteness and abstractness: learners have to cope with the work situation and job assignments with which they are confronted; they become familiar with a wide range of work problems; they find out what certain work process involve, how to tackle the work, how the work is structured and organised. This company-specific experience and knowledge is abstracted step by step and to various degrees to single out the main features and their interrelations, i.e. its regularities

and structures are made intelligible to them. It thus acquires an interdisciplinary, general significance and facilitates comparison, adaptation, transfer and change.

- Routine and innovation: any occupational activity has some repetitive elements; learners gradually learn these routines, starting with simple skills and going on to execute complex tasks. Routine is mentally less strenuous; one no longer needs to think about how to execute these tasks. Alongside this, time and again—and apparently far more frequently than in the past—workers are confronted with new, unusual, surprising situations. These call for improvisation and innovative solutions because they defy familiar rules and the lessons of experience. They have to develop both the ability to handle routine work and the ability to be flexible and creative in coping with situation and tasks.
- Action and reflection: learning within a work context means taking action, becoming actively involved in order to make a decision, to design, to process. Practical assignments are a challenge to act; the subsequent action is of differing quality depending on the stage of learning reached. Practised action has to be reflected on, reconsidered, time and again, and analysed and evaluated with a view to its impacts, functionality and quality. This is something trainees also have to learn. This feeding-back of experience, this analysing of action procedures and their result, the comparing and contrasting of different approaches and strategies promotes action which is deliberate, well targeted and flexible.
- Intentional and spontaneous learning: training is organised and learning processes are designed in such a manner that the goal targeted by the trainer is reached by as many learners as possible. The subject matter to be learned is not left to chance. Every trainee should attain at least the prescribed qualification standard. Alongside this intentional learning, a spontaneous, individual type of learning usually also takes place, a type of learning which is usually not—or only indirectly—subject to 'control'. This informal, unplanned learning is particularly noticeable in open situations, when no one points the way to the answer, when the learner himself works out the way to handle the problem. That which an individual perceives, retains, considers and analyses is controlled by his own perceptive and cognitive patterns, his or her own personal strategies. This personal learning is experiencing a comeback in vocational training. Of course, it always takes place—whether wanted or otherwise—but today it is being deliberately permitted in order to promote the development of competence and the ability to learn again and learn anew. Self-managed, individual learning is an indispensable factor for lifelong learning.

These five sets of opposites emerge in a variety of strengths and permutations in complex real-life learning situations. None of them can be strictly associated with any particular learning venue. Routine is by no

means observable and acquirable exclusively in the real-life work context but equally in a training workshop or a seminar room. Innovation is not the prerogative of project work within a training centre. Distance and abstractness are not unique to conventional in-company training centres, nor is action unique to the work process. The new, workplace-related learning situations such as learning islands or technology centres are particularly suitable for deploying a range of didactic principles; their structure is multi-dimensional. In the same way, a range of didactic elements can likewise be used in modern forms of project work or self-managed group work.

Concluding comments

Learning in a work context is by no means bound to a dual system of vocational training such as that practised in Germany. It can be integrated into various system structures. But wherever vocational training aims primarily at developing occupational competence rather that an accumulation of knowledge, special significance has to be attached to work-related learning and, by extension, to using corporate operations as a source of expertise and experience. With an increasingly complex working world which needs to remain open and modifiable, and with the spread of a holistic, 'systems' perception of corporate operations and their organisation, increasing importance is now being attached to the role of the work context as a learning venue. Such an approach makes it possible to develop, continuously and at a relatively early point in time, an adequate understanding of corporate interactions and an ability to cope with complexity and change. It allows for personal experience of and practice in handling the constant and instant changes—so typical of today's working life—between carrying out standardised, formalised work and using innovation and flexibility to solve unforseen problems. This by no means makes specifically designed learning situations in dedicated establishments redundant; these are likewise indispensable. The important thing is to strike the balance between these elements which is right for the vocational training system at hand.

[1] To date, some 60 per cent of each age cohort have undergone training within the dual system; the year 1990, however, was the first in which Germany had more students that trainees. Although these figures are not directly comparable from the statistical viewpoint, they do have an indicative value.

[2] The reader is referred to the debate on 'key skills'. Developing these skills is part of a sound training. Interdisciplinary, personality-related skills are called for in the revised training ordinances.

[3] 'Personnel and educational controlling' are complex tasks which call for more than the conventional instruments of business management: broader-based economic approaches which include the 'subject' factor in a differentiated manner.

[4] In an in-house research and development project to promote systems thinking and interrelational understanding, we have tried to describe such a complex ability and identify ways and means of developing it within the framework of in-company initial and continuing training. We defined 'systems thinking and interrelational understanding' as the interplay between the following components: openness vis-à-vis in-company processes and structures; readiness to explore one's workplace surroundings; recognition of the technological, organisational and social correlations which are important for one's own work; handling complexity by drawing on suitable strategies or rules; acknowledgment that every work system is modifiable, that alternatives exist; readiness to change perspective and role; ability to cope with uncertainty.

[5] 'Systems thinking', for example, in the sense of acquiring a better understanding of a company's internal interrelations and structures, cannot be learnt in a vocational school. It is true that a basic knowledge of corporate structures and organisation can be imparted here, but not the ability to act competently and taking account of such interrelations. And the experience gained in this respect from the school as a system is difficult to apply to the company as a system: the two systems are too different in terms of their structure, processes, tasks, objectives, and the people involved in them.

[6] We distinguish here between:

(a) workplace-based learning which takes place at an actual workplace under normal operation conditions:

(b) training-place-based learning which takes place not within the work process itself but largely under the same conditions and which is based on activities carried out during the actual production process;

(c) workplace-oriented learning which involves training provided away from working life but with job assignments with a clear correlation with the work process.

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3 The unitisation of qualifications across the academic/vocational divide: implications for curriculum design and the measurement of quality

Geoff Stanton

In the United Kingdom at the moment there is a considerable national consensus about the importance of the 'further education phase', and the need to increase the number of our citizens participating in it, to increase the level of their attainment when they do participate, and also to ensure that the nature of what they achieve is, in its relevance balance, appropriate to modern needs.

By the further education phase I mean that learning, (whether it be labelled education or training) which follows the end of compulsory schooling, and either provides a route through to employment or higher education, or else serves as an end in itself for adults who need existing skills or knowledge to be updated or underpinned.

I would guess that these three aims, namely to increase: participation, attainment, and the quality of what is attained are shared by many other countries and systems. I would also guess that some of our subsidiary aims are also held in common. These include the need to establish and maintain parity of esteem between academic and vocational courses and qualifications, the need to fund and manage colleges and other providers in a way which encourages them to simultaneously improve both the cost-effectiveness and the quality of what they do, and the need to provide access points and learning programmes which are varied enough to suit the needs of a wide variety of target groups (many of which are currently under-represented in the system) without compromising the standards being

achieved or the qualifications which attest to these standards.

These are the aims and principles, about which there is—as I have said—considerable agreement across all political parties, from all sides of industry, and from those involved in education and training whether they are based in schools and colleges, or in the workplace.

However, in practice, there are considerable problems. These include:

- a potential divergence between the way in which academic and vocational qualifications are specified, reflecting in some cases a divergence of the philosophy upon which they are based;
- a tendency for mechanisms or subsidiary aims to become ends in themselves, with the consequent failure to understand their interrelationships;
- an inability to manage change in a coherent and cost-effective manner, with the result that those in the system during the time of change may have their interests harmed.

In this paper, I wish to propose a means of specifying qualifications within a common framework in such a manner as to overcome some of these difficulties, and to link this with an approach to managing and measuring quality which helps maintain it—not only during a time of change, but at a time when these changes include attempts to significantly extend the numbers participating while lowering unit costs.

Before launching into this, perhaps I could make reference to one particular factor which I suspect may be peculiar to the culture of England (and I mean England, rather than, for instance, England, Wales or possibly Northern Ireland). Despite everything, including rumours to the contrary, the English education system has succeeded over recent years in increasing significantly both the number of people staying on after the end of compulsory schooling, and the level of their achievement. This has produced an interesting reaction in some quarters. It is suggested that this can only have been achieved by a willingness to award qualifications to people whose attainment, in a previous 'golden' era, would not have justified the awards they are now receiving. While there is and will be a continuing need for vigilance in this respect, and while also accepting that there is a need for some procedures and professional practices to be tightened up and made more accountable, I think this reaction also reveals something fundamental. It is this: some opinion leaders in our country believe, it seems to me, that our population has a relatively fixed number of intelligent and able people within it. Although it is not made explicit, the behaviour and attitudes of these opinion leaders reveal that they have been assuming that it has been the function of the education and training system to identify who these people are, and—by a system of appropriate filters—to sift out those who are not part of this 'golden' group. Although lip service

has been paid to the role of the education and training services in enabling this generation to achieve more broadly and to a higher level than previously, evidence that this might have happened is immediately treated as suspect. In other words, there is no real belief in the ability of teachers to enable more people than previously to learn more things than previously. This may be a peculiarly English disease, I hope it is. But I mention it in case it raises echoes elsewhere.

The gist of what I want to propose in this paper can be summarised in the form of the following propositions:

- We should develop a common procedure for identifying what *existing* qualifications of all types can attest to, in terms of what the individual knows, understands and can do.
- We should recognise that the 'value' given to an individual qualification by the public in general, and by specialist interests such as those who recruit to industry or higher education, is dependent upon a combination of:
  - how much learning the qualification represents ('volume');
  - the *level* of that learning or attainment;
  - the *nature* of that learning or attainment.
- When we analyse what qualifications are saying in terms of 'outcomes' (what someone knows, understands and can do) we will find that these outcomes will form coherent clusters, which I shall wish to call 'units'.
- We need to be able to map both qualifications, and the units which form them, on to a framework which shows how they relate to one another, in terms of volume, level, and nature of learning.
- In addition to mapping existing qualifications in this way, new qualifications should be located on the same map.

Although all this sounds complicated when presented in this way, it can, in fact, much simplify what is usually a jungle of academic and vocational qualifications, described in ways which prevent a clear understanding of what they represent and how they relate one to another.

Lack of clarity about the outcomes a qualification represents, or the adoption, for historical or cultural reasons, of arbitrarily different ways of describing these outcomes often means that the value of a qualification becomes tied too closely to a particular means of acquiring it. In other words, a qualification is judged by the way it has been obtained, or in whose presence it has been obtained. The reputation of a qualification is also affected by which 'club' it manages to gain membership of. If, for instance, it can be categorised as 'academic' rather than 'vocational', or (in our country) as a degree rather than a higher national diploma, then a self-fulfilling prophesy is set up. Those qualifications or places with the best reputations can pick and choose from among the most able candidates. Whether or not they then teach them any better, or give them richer learning

experiences, they may produce, because of their ability to select at entry, better graduates, thus confirming their reputation. Meanwhile, of course, as the reputation of these institutions is growing, that of others—possibly through no fault of their own—is sinking.

If this only affected the institutions concerned, then we might shrug our shoulders and say 'So what, life is hard'. However, it also crucially affects the life chances of individual learners. Not all of them can gain access to the modes or places of learning which are most prestigious. Their location, domestic obligations, or early schooling all may prevent this. In some cases, the learning programme which leads to particular qualifications has developed over time around a particular group of participants who have always happened to have been in the majority. What these participants have in common might be their gender, age, ethnic origin, or social class. Potential learners who do not have these common characteristics may find great difficulty in adapting to and benefiting from a traditional learning programme. We must be clear about this. This is not to say that they are not capable of achieving the outcomes represented by the qualification for which they are aiming. Equally, we are not arguing that the outcomes should be amended in the light of their background or previous experience. What we are saying is that they should not be made to achieve that qualification via a route designed for learners with different characteristics, or penalised because of the difficulties they have had in doing this.

In many countries and cultures, those in charge of these learning programmes and qualifications have often had a large degree of self-interest in maintaining some aura of mystery about the outcomes they represent. It has reduced their accountability, and increased the dependence of their students upon them. However, this situation is changing. As providers come under political pressure to take more learners at a lower unit cost, their self-interest becomes best served by explicitly defining what the standards are they would wish to protect. Otherwise, their suggestion that they are being pressed too hard, that teaching hours have been reduced too much, that group sizes have been increased too much, will all be seen as the natural defensive mechanisms of a profession being dragged kicking and screaming into the modern age.

All this prepares the ground for the definition of the units (the collation of outcomes) of which all qualifications are comprised. These then need to be placed in a common framework, which could hold qualifications which extend in level and type from those available in the last stage of compulsory schooling, through what I am calling the further education phase, into higher education.

If we do manage to define and preserve the standards which are embodied in qualifications in this way (and if we don't define them, we shall find it

difficult to defend them), then it becomes possible to adopt a different but complementary definition of quality as far as the learning programmes are concerned. With respect to learning programmes, we should use the often quoted industrial definition of quality, namely that which is 'fit for its purpose'. In this case, the customers whose purposes have to be served are, of course, the learners.

All this requires me to add three further propositions to the list I have already made. These are:

- That while simplifying the ways in which we describe the destinations to which learners are headed, we should ensure the greatest possible flexibility with regard to alternative routes to these same destinations.
- We should apply the terms 'quality' and 'fitness for purpose' to both qualifications and the design of these routes or learning programmes.
- All of this should be prepared for and held together by an integrated system of guidance and record keeping.

In the next section of this paper I shall explore in more detail the possibilities and problems involved in defining qualifications in terms of units of outcomes. In the following section I shall go on to look at what 'fitness for purpose' might mean in terms of meeting a variety of legitimate learner needs, and I shall conclude by linking the two together into an approach to indicators of quality.

I have indicated that there may have been a traditional reluctance on the part of those responsible for academic or higher education (and I do not equate the two incidentally) when it comes to defining what they do in terms of outcomes. As far as vocational qualifications have been concerned, there has—in many countries—been a recent rush towards defining qualifications only in terms of outcomes. I don't think that all approaches to this should go unquestioned, nor do I think that all the objections or dangers described by traditionalists should be ignored.

This is a difficult and complex topic, and I will not go into it fully here. What I will say is that I think we should do our best to be as explicit as possible, and as unambiguous as possible, about outcomes. However, I would equally argue that it is rarely possible to be completely explicit or unambiguous, however carefully or extensively the outcomes are described in writing. Indeed, once the descriptions become too extensive or detailed, this in itself becomes a barrier to comprehension. You can get to the point where although the description has become so extensive and carefully written that those who are responsible for it are convinced of its lack of ambiguity, they are the only ones who fully understand what it means. Others miss the nuances, don't realise how carefully it has been phrased, and in despair return to their instinctive judgment about what is required.

A commonsense approach to this would, I think, start with a written statement which was as clear as was compatible with pithiness, but would then combine this with exemplars, supplemented by meetings between those responsible for assessment, so that a common view of the meaning and application of the written statement could be developed. This would be a useful combination of what have become, in our country, the vocational and academic approaches.

On this basis, I believe we could usefully move forward. It does have implications, however, for both sides. I can imagine some rumbustious debates about what, for instance, a given qualification in history actually *means*, and on the vocational side we might have to accept that not all workplace supervisors, how ever well trained in techniques of assessment, can be relied upon to make consistent judgments about standards unless they are (somewhat expensively) linked and networked with other people in similar roles.

Let us make the brave assumption that we have managed to analyse all existing qualifications into collections of outcomes called 'units'. You will remember that we now have to be able to describe the size, type and level of these units.

We also, incidentally, need to define what combinations of units are acceptable for gaining a given qualification. By comparison this is a fairly simple issue!

The issue of 'size' is also fairly simple, if you will accept a fairly crude solution. In common with many others, the Further Education Unit (FEU) has decided that, for the time being, the best way to do this is to relate the unit to the number of learning hours an average learner in the presence of an average teacher in an averagely equipped institution would take to achieve the outcomes described. This is by no means the perfect method, but it does seem to be the least bad and most workable. Crucially, it does get over the need to artificially require all units to be of the same 'size'.

The issue of allocating levels is likely to be far more contentious. I am sure that the attempt to do so will flush out fundamentally different value judgments about what learning matters and why. Various approaches to this are being explored. Some refer in a somewhat circular manner to the level of prerequisite qualifications. Others assume that certain topics are intrinsically more difficult than others. Others take this a bit further, by attempting to define 'difficulty'. Sometimes this might be done in terms of the degree of learner autonomy implied or required. It may also be a matter of the extent to which certain 'core skills' of analysis, problem-solving, synthesis, task management, and so on, are demonstrated in the course of tackling a given topic, issue or role.

None of this is new, of course. If we attempted to reinvent the whole system of higher education at this point, we would have similar debates and difficulties when it came to deciding what a degree of a given class in history had in common with one in economics or another in physics. However, we will have to accept that in the creation of a new system all this will be ignored, and we may have to accept that when these difficulties eventually emerge, there will be the normal risk of the messenger being shot.

The next step would be to allocate units (of a given size and level) to certain categories. The need for categories at all may be less obvious than the need for levels and sizes. However, I want to propose three simple ones for the sake of the argument in this paper, and use them to explain the need for them and their purpose.

The three categories I wish to use have the working titles of:

- abstract
- applied
- job-specific techniques.

The 'applied' category can be used to explain the other two. Units in this category would test whether those who had a theoretical understanding in a given area could act on that understanding in a timely and appropriate manner. It would also be possible to test whether those who had acquired certain techniques to a very sophisticated level understood the principles upon which they were based.

It is important to emphasise that these categories apply to individual units, rather than to qualifications as a whole. A given qualification will almost certainly include a combination of all three types of unit. However, different qualifications will show different proportions of these units.

Let me apply this to what I am calling the further education phase. For someone who is continuing after the end of compulsory schooling with academic subjects, it is likely that—when these subjects are broken down into units of outcomes—a large proportion of the outcomes will appear in the 'abstract' category. However, this will depend upon the combination of subjects chosen, and their design. You may know that in England students who go on to what we call an advanced level programme between 16 and 19 years of age usually only take three subjects for two years. If these three subjects were, for instance, history, classics, and English literature, then a very high proportion of the units concerned might fall into the abstract category. However, a fellow student might be taking A-levels in applied physics, craft design and technology, and geology. In this case, although there would still be a significant number of abstract units, an equally significant number might fall into the 'applied' category, and it is also likely

that a number of specific techniques will be acquired which have direct relevance to certain kinds of employment.

The 'shape' of the overall qualification being gained by a student studying these three subjects might, in fact, be almost identical to that being achieved by another student on what we might call a 'vocational' programme. For instance, and to switch my examples, when analysing into outcomes, what a student on certain business studies programmes is learning to know, understand and do might be very similar indeed to what a fellow student studying the three A-level subjects of economics, law and accountancy might be acquiring. We can immediately see, therefore, that these two qualifications, although presently categorised differently as 'vocational' and 'academic' are in fact almost identical. However, that is not to say that all vocational and all academic programmes of the same level are equivalent in this way. The degree of overlap between a qualification in construction and one of a similar level in history, classics or literature might be very small indeed.

You might be able to discern from this why I anticipate that the issue of defining levels might be very problematic. On what basis will we say that a qualification in construction and one in classics is the same 'level'?

However, the value and purpose of categorising units into types can, perhaps, now be also seen.

First of all, it begins to dissolve the so-called academic/vocational divide. Secondly, it enables us to plan progression on a far more rational basis. If the higher level course on to which a learner wishes to progress requires high-level performance on abstract units, then either an academic or a vocational programme which provided this might be appropriate. In some cases, of course, it will be necessary to have some content knowledge as well, but whether this is the case often depends upon whether the subject being offered at university level is also on offer within the school curriculum. As far as employers are concerned, it would enable them to distinguish (say) between those applicants whose English qualification contains applied units from those with a qualification in the same subject but who could be less well equipped to take minutes of meetings, analyse reports or conduct interviews.

Thirdly, it gives us a much better basis upon which to offer students guidance about which subjects or courses they would wish to enrol for in the first place. At the moment, in our country, you may get information about prerequisite qualifications and about the topics covered by the course you are considering entering. You rarely get an analysis of the types of learning required. This leads to, for instance, learners applying to study psychology because they have an interest in people, but without realising

that there may be a requirement for the understanding of statistics. It also leads to learners enrolling in vocational courses in (for example) child care, with an overly romantic notion of what would be required of them.

Finally, in this section, I perhaps ought to make the point that this division of units into these three types would be dangerously reminiscent, for some, of the division of schooling into grammar, secondary technical and secondary modern, which was proposed by our 1944 Education Act in the UK. The crucial difference is, of course, that by accepting that such differences exist, but *within* each qualification, we avoid the damaging assumption that there are three types of people who have to be selected for three quite different types of schooling, with very little possibility of transferring between them once the selection has been made.

I now want to move on to consider the range of choices which learners might legitimately wish to have available to them if they are going to be in a position to find a learning programme fit for their particular purpose. I will explore this by discussing five kinds of choice which may need to be made available.

(i) Location

Some learners may wish to continue their personal and career development in a place of employment, with the status of worker. They would wish their work to be designed (within the constraints of the nature of production) to give them as many learning opportunities as possible. Other learners are much more attracted to being a member of a student body, being based therefore in a school or college. All too many, however, are not given these choices. We therefore have a situation in which, in a time of recession, some people who would wish to continue their learning in the workplace are forced to stay on as full-time students, while others, because perhaps of difficult domestic financial circumstances, are forced to go out to work when they would rather continue the life of a student. However, the framework I was attempting to describe earlier should mean that even when these choices are 'forced', the location of learning should not determine the nature of the qualification they obtain.

(ii) Subject-based or integrated

Some learners find the variation provided by a subject-based curriculum to be stimulating and enjoyable. They like the fact that different teachers have different approaches, and can tolerate the fact that little attempt is or can be made to relate what they are learning in one subject to that of another. Others find this destructive and disorientating. They would prefer to have their work on communications, numeracy and science units (for instance) linked by a common thread, such as a vocation like motor vehicle engineering.

(iii) Vehicle for learning

Some learners would prefer to continue their personal and career development through the study of a traditional academic subject, such as history or literature, whereas others might wish to achieve very similar objectives by following up an interest in a vocational sector such as nursing or business administration. In some cases identical outcomes might be achieved on any of these routes.

(If I now link these last two choices together, it enables me to point out that in England, at any rate, it is not possible to follow a programme based upon academic subjects which is also integrated. We have no equivalent of the French Baccalaureate. On the other hand, many vocational schemes are becoming increasingly integrated, making access to them somewhat difficult for those who can only acquire units one at a time.)

All of this also raises the question of what exactly is meant by the 'academic/vocational divide'. I would wish to maintain that it means two distinct things. On the one hand, it can refer to the nature of the outcomes being worked towards, and who or what defines them. In the case of 'academic' qualifications, some of these outcomes derive from the tradition of scholarship and research within a given academic subject area. In the case of vocational qualifications, outcomes are derived from the requirements of certain occupational roles. On the other hand, there is also a very important second meaning of 'vocational' versus 'academic': namely, whether someone wishes to use an academic subject or a vocational sector as a vehicle for their personal learning and development, of whatever kind. (The outcomes achieved could be very similar, whichever 'vehicle for learning' was chosen.)

(iv) Learning style

Another choice that can be very important to learners is that of 'style'. For instance, some need to be active learners, participating in practical and group work. Others find this much more threatening, and are content to be a relatively passive spectator in the presence of a teacher performing with skill and wit. In some cases, of course, the style needs to be dictated by the nature of the outcome being worked towards. In many cases, however, it is determined rather more by the preferences of the teacher, ignoring the variation of preferred style which may exist among the student body.

(v) Sequence

Finally, learners vary in the order in which they wish to acquire their learning. It is a conventional wisdom to suppose that we all wish to lay a broad foundation before specialising. Unfortunately, I do not think this corresponds with everyday experience. Many of us enjoy and even need the motivation of the reward and status which come from a

high degree of specialisation. This may particularly apply to school leavers at 16. In their case, an insistence upon laying a broad foundation, the relevance of which may not be immediately apparent to them, may result in them refusing to participate at all. However, I have the faith that most of them will, within a comparatively short time, come to realise that without broadening out their motor vehicle studies (say) to include an understanding of finance, employment law and interpersonal skills (for instance) not only will some of their larger vocational ambitions not be achieved, but they will fail to make the best use of their own abilities and potential.

To summarise then, I am suggesting that learners may benefit from a choice of :

- *location* and status (employment-based/work, versus education-based/student);
- *mode* of learning (discrete subjects versus integrated, full-time versus part-time, and so on);
- *vehicle* for learning (academic subjects as opposed to an interest in a vocational sector);
- *style* of learning (for instance, passive as opposed to active);
- *sequence* of learning.

All this variety and all this choice can be provided cost-effectively within a comparatively simple qualifications framework as outlined earlier, as long as the distinction between the specification of qualifications (plus the evidence necessary for awarding them) and the design of learning programmes are understood and made the best use of.

I mentioned earlier that there were some objections to the specification of qualifications in terms of outcomes, and that these were worth paying attention to. One objection is related to the importance of the process by which learning is acquired. Many outcomes-based approaches are deliberately agnostic about process, on the very good grounds that unnecessary specification of process bars access to the qualification for many learners and citizens. On the other hand, many of us do feel somewhat unhappy at the thought that someone's overall competence can be adequately reflected by the acquisition of a large number of separate units, by whatever means. I think there may be two kinds of worry here, which can be addressed in different ways.

The first is concerned with whether, despite the acquisition of a large variety of areas of skill and understanding, an individual may nevertheless fail to deploy them effectively, in a manner which is timely and appropriately synthesised. Those who advocate the outcomes-based approach would say here, I think, that this simply reveals that we have a missing 'unit'. In other words, we need to add a set of outcomes which are concerned with

someone's ability to deploy the other outcomes appropriately. (This may have, of course, significant implications for methods of assessment.)

This leads me on to my second point. One advantage of the outcomes-based approach is that it becomes possible to offer alternative sources of evidence for the same set of outcomes. However, at the present state of our knowledge and understanding it may well be that the *only* evidence which we can find for certain outcomes is that someone has been through a certain process of learning, or has been engaged in a given activity for a given length of time. If this is the case, then it becomes possible to 'write in' these processes as the necessary evidence for a given set of outcomes.

Sometimes the worry about the outcomes-based approach is its assumption that only one defined set of units can make up a certain qualification. I have some sympathy with this objection. It seems to me that it would be fairly simple to overcome it however, as long as we do agree to allocate units to levels and types of attainment. It then becomes possible to say that while a certain group of units may be essential for a qualification, there may be some choice about the additional kinds of achievement which go to make up the rest. This 'core plus options' approach also enables local flexibility to allow for the differences in perception and requirement which will doubtless continue as between different 'gatekeepers'.

The consideration of 'process' also leads us on to an examination of what 'indicators' would adequately report on the extent to which a given college or training provider was achieving the necessary levels of quality in what they did.

While, as I have now made clear at perhaps tedious length, I am keen that attainment should, as far as possible, be identified and reliably reported upon, it is not enough, in my view, to define either learner entitlement or institutional quality in terms of qualifications gained alone.

Firstly, many qualifications in the further education phase are designed to fit the purposes of gatekeepers of various kinds: those who recruit to industry or higher education. That is acceptable, as long as we do not restrict the breadth, depth or variety of our learners' achievement by confining them to what their qualification requires.

Secondly, it is not the case that we shall achieve the desired increase in participation in the further education phase just by making more places available or by clarifying progression routes. Many of our potential clients are reluctant, or even alienated. I have already argued that they need learning programmes which attract and suit them, and keep the right options open.

Thirdly, there is considerable danger that—if too much attention is given to judging an institution by the level of its qualification results alone—then it will take the easy way out and maximise these by severe and unfair constraints at the point of entry.

What does all this imply for the measurement of quality of further education provision? The Further Education Unit is currently exploring the 'manx' or three-legged approach to quality measurement. This suggests that we should consider some combination of:

- qualifications gained
- distance travelled (sometimes called value-added)
- services to defined standards.

'Distance travelled' is especially important, for the reasons I have given above. A measurement of this would allow us to identify those institutions which, while not matching others in absolute terms, nevertheless enable students to make greater progress for the same input. Many further education colleges in the UK are very keen to be able to continue offering second chances, and accepting candidates whom others have always regarded as unpromising. The creation of the kind of framework I was attempting to describe earlier would make this process of measuring 'distance travelled' much easier. In the case of school leavers, their school leaving record would show where they were on the map, and would allow institutions to track the degree of progress they were making (which might be either vertical or horizontal) as their courses progressed. At times of change, it is particularly important to be able to track this progress en route, without having to wait for the final qualifications to be gained or missed. By then it is too late for the cohort of learners in question. Good curriculum management requires that it should be possible to check whether moves towards increased cost-effectiveness have been worthwhile, or have inadvertently damaged the prospects of current students.

Adults re-entering the further education phase do, in any case, benefit from an initial diagnosis of their current level and nature of attainment. Without this, much of the subsequent learning programme may be redundant or too demanding. The creation of the framework again enables this diagnosis to take place on a systematic basis, and for their subsequent progress to be similarly monitored.

Having said all this, and given that we have successfully tackled the serious technical problems involved in measuring both final attainment and distance travelled, there will, I am sure, remain a sense that we would, nevertheless, prefer ourselves or our children to attend some institutions rather than others. The issue of 'service to given standards' is an attempt to pick up other factors and to prevent one institution appearing more cost-effective than another, by failing to provide some very necessary facilities or support.

The services I have in mind could refer to such things as:

- the availability of different modes of learning (see some of the 'choices' I advocated as being necessary earlier);
- the right to transfer on to a parallel course if one's first choice proves to be inappropriate;
- access to private study space or libraries;
- the ability to progress to further education or employment;
- the accessibility of tutorial and other learner support;
- the availability of impartial guidance;
- adequate refreshment and social facilities;
- the extent to which provision is equally available to some of the different groups of learners I mentioned earlier in this paper.

Although I am arguing that these 'services' should be specified, it devalues them if—as often happens—they are described too loosely, or if their availability is more apparent in the rhetoric than the reality. Most of them have implications for resources. An entitlement to a service cannot be said to really exist, unless the conditions for its availability have been specified, and there is some definition of what it means. For instance, the ability to transfer between courses, should the initial choice prove to have been wrong, may need to be constrained by saying that it must take place within a certain number of weeks of the start of the programme; that the transfer may only be to groups which still have room available in them; and to provision which shares similar prerequisites. On the other hand, there also needs to be clear description of the procedure the individual has to put into operation if he or she wishes to make use of this entitlement. All too many 'entitlements' are only kept within available resources by making the means of taking advantage of them entirely obscure.

If what I have been trying to describe seems over-complicated, I do apologise. Some of this doubtless arises from my inability to explain it all clearly and succinctly. However, it may also come, in part, from our general inability to escape from traditional ways of looking at the world of curriculum and qualifications. In particular, we may find it difficult to separate learning programmes from qualifications, and to realise that it is possible and necessary to adapt the learning programme to the characteristics of the learner without altering the standards embodied in qualifications. It is also possible to break the qualifications down into units of outcomes, while still keeping the freedom to run coherent integrated programmes, or to teach the units separately, or even to create an exciting learning activity which leads towards two or three different units.

In any case, I would argue strongly that none of what I am proposing is—in reality—as technically complicated or politically difficult as other recent and important initiatives in the UK, such as the creation of the National Curriculum, and the introduction of National Vocational Qualifications.

Neither is it in competition with these two initiatives.

Rather, it proposes a common set of standards and procedures within which both can exist, and within which their relationships can become clear for the benefit of all. There are doubtless many technical and other problems to be solved, and some pitfalls of which none of us are yet aware. However, since it is an evolutionary rather than a revolutionary proposal, we can work towards it without over-commitment at this stage, and without doing damage to the good quality of existing provision. It is also the case that an individual college, a local consortium of colleges, or partner schools/colleges and higher education institutions could voluntarily work towards this approach, whatever anyone else did. Support and understanding from national level policy makers would be extremely helpful, but it is not a requirement.

However, to the extent that we could implement the proposals I have been attempting to describe, we would achieve a prize which would not only make our current systems significantly more fit for the purposes of its customers, but would also pave the way for flexible and constructive development in the future.

To do this will require the support of a number of lines of research and development, which will need to be coordinated. These include work on:

- the most cost-effective means of specifying standards and of implementing them consistently;
- means of defining and agreeing levels;
- means of defining and agreeing types of outcome;
- means by which colleges and employers can flexibly provide a range of routes to these outcomes.

4 Reform of tertiary education: the New Zealand experience

Rory O'Connor

In this paper I intend to set the New Zealand educational reforms in context, identify the goals the government had for the reforms, outline some of the developments and then to touch briefly on the following issues:

- finance
- structure
- qualifications
- control.

Any discussion about the New Zealand experience makes sense only when viewed against the background, where we were and the context.

The election of the Labour Government in 1984 on what was later seen as a less than clear manifesto led to a massive change in all sectors of New Zealand society. The policies of previous governments in the 1960s and 1970s had cocooned the New Zealand economy. By all indicators, such as national indebtedness, export and import figures, change was necessary, but few were aware of what was in store once David Lange and Roger Douglas were in power.

It is beyond this paper to spell out all that has occurred. However, market forces, competition and flat playing fields were significant principles.

The truisms of the day included the reworking of catchcries of Orwell's *Animal Farm*, 'private sector good, public sector bad' (though I am bound to say that the events of 1988 tarnished that somewhat!), 'a manager is a manager no matter what activity', 'education suffers from provider capture', 'lean and flat organisations'.

The education system was, in broad terms, centrally controlled though mediated to varying degrees through such agencies as education boards for primary schools, separate boards of governors for secondary schools and councils for tertiary institutions, with the university councils worked through a university grants committee. The structure was seen as rigid,

overly bureaucratic, unresponsive. Too many decisions were seen as being made in Wellington.

Government had received a number of reports covering various parts of tertiary education, including the:

(i) Probine-Fargher report on polytechnics [*The Management, Funding, and Organisation of Continuing Education and Training*] (March 1987);
(ii) Shall crass report on non-formal education [*He Tagata*] (September 1987);
(iii) Treasury briefing paper [*Government Management vol 2: Education Issues*] (July 1987);
(iv) Watts report on universities [*New Zealand's Universities; Partners in National Development*] (October 1987);
(v) 1988 tertiary reviews [*Report on Submissions to the Tertiary Review*] (February 1988);
(vi) report of the Royal Commission on Social Policy [*The April Report*] (April 1988);
(vii) Picot report on educational administration [*Administering for Excellence*] (May 1988).

The reforms aimed at developing a responsive education system of high standard with optimum costs, and services at the institutional level rather than in centralised bureaucracies. Institutions were to operate autonomously and a market was to be encouraged in education, particularly in the post-school sector.

The centre was to be for policy advice to government, funding distribution and accountability.

The goals of the reforms in tertiary education are best seen in the long title of the Education Amendment Act 1990:

> An Act to reform further the administration of education and, in particular, to reform tertiary education and training with a view to:
> (a) giving tertiary institutions as much independence and freedom to make academic, operational and management decisions as is consistent with the nature of the services they provide, the efficient use of national resources, the national interest, and the demands of accountability;
> (b) establishing a consistent approach to the recognition of qualifications in academic and vocational areas;
> (c) encouraging greater participation in tertiary education and training, in particular by removing barriers to access for

those groups of persons who have previously been under-represented;

(d) contributing to a dynamic and satisfying society by promoting excellence in tertiary education, training and research.

The reforms were implemented in two stages:

- Pre-school, primary and secondary reforms came into force 1 October 1989.
- Tertiary reforms came into force 1 July 1990.

This meant that tertiary institutions were to be directly funded on an equivalent full-time students (EFTS) formula basis which recognised different cost categories for courses; each institution had a charter which set out its purposes approved by the Minister, and an annual contract for the delivery of so many EFTS.

Accountability requirements were to be met through audits by the Controller and Auditor General and reports to the Ministry.

A consistent approach to qualifications in academic and vocational areas was to be achieved through a national qualifications framework.

Well, what has been our experience. Let me briefly outline the developments concerning finance:

- Study Right was implemented.
- An EFTS bulk funding system has been put fully into place in the tertiary sector.
- Funded EFTS places have risen 15 percent over two years.
- Private training establishments have received some funding.
- A subsidised student loan scheme has been introduced.
- Student allowances are provided according to government's targeting criteria.

There are a number of finance-related issues which still have to be resolved. These include:

- maintaining growth in the tertiary system in a situation where there is no new money;
- the number of institutions, and the existence of small institutions;
- the competing claims for funding of industry-based training and institutional education and training;
- the stimulation of an education market through increased funding to private training establishments;
- the development of open learning and EFTS system;
- charges on capital investment in institutions;
- refinements of the EFTS approach to funding.

A tuition subsidy policy incorporating Study Right policy has been implemented successfully from the beginning of 1992, and has been fully integrated with the EFTS funding system. Bulk funding allocations to tertiary institutions have been made without any insurmountable problems for three years.

A key principle of government relates to market forces, and certainly Treasury advice on the sector was for the establishment of a market. In part this is seen in the competition between the tertiary institutions for the education dollar. It is also seen in the changes to student support schemes, and the fees charged for courses, up to full cost in some cases. What we have also seen is the growth in the private provider market, and the growth in applications for registration.

Some of those private training establishments are seeing themselves building to be capable of teaching higher levels on the national qualifications framework and providing qualifications which were previously only available at polytechnics, colleges of education and universities.

One of the early rapid areas of growth was in the provision of English language schools for overseas students. For a number of reasons several of these collapsed, and questions are being asked about the adequacy of the control measures. A very interesting issue arises about the place of controls in a market economy.

The EFTS-based bulk funding system has given the tertiary institutions a welcomed greater degree of autonomy. They see it as fairer and more consistent.

Some competition has been introduced by government into the provision of tertiary education. A contestable sum of $2 million for 1992 has been set up for private providers which offer approved courses meeting government's priorities.

An important structural issue is the interface between school and post-school education and training. The government wishes to increase the participation of the 15-19 year old cohort in education and training. Through its industry skills training strategy it aims to have students while at school begin to gain credit for vocationally oriented qualifications. These may be more in generic competence areas.

It is also proposing that students can be enrolled simultaneously in two or more institutions, and also be in the workforce, perhaps in some form of traineeship. This multiple enrolment raises issues of differential funding at present for schools and post-school institutions and double-dipping.

A major issue is that of qualifications. The government has, as a major element of its reform of tertiary education, established the New Zealand Qualifications Authority (NZQA).

It is a government agency with its controlling board appointed by government, established 1 July 1990, which has the responsibility to put the national qualifications framework in place.

The scope of the NZQA encompasses the senior secondary school awards, vocational certificates and diplomas and degrees. Its functions, as set out in legislation, are:

(a) To oversee the setting of standards for qualifications in secondary schools and in post-school education and training;
(b) To monitor and regularly review, and advise the Minister on, the standards for qualifications in secondary schools and in post-school education and training, either generally or in relation to a particular institution or private training establishment or a particular course of study or training;
(c) To develop a framework for national qualifications in secondary schools and in post-school and training in which:
    (i) All qualifications (including pre-vocational courses provided under the Access Training Scheme) have a purpose and a relationship to each other that students and the public can understand; and
    (ii) There is a flexible system for the gaining of qualifications, with recognition of competency already achieved;
(d) Subject to subsection 2 of this section, to establish policies and criteria for the approval of courses of study and training at institutions and private training establishments;
(e) Subject to subsection 2 of this section, to establish policies and criteria that will enable institutions and private training establishments to be granted accreditation to provide courses of study and training
(f) To ensure there are mechanisms in place to guarantee the different institutions or private training establishments providing approved nationally recognised courses have assessment procedures that are fair, equitable, consistent, and in keeping with the required standard;
(g) To assist overseas governments, agencies of those governments, and international agencies in the development and operation of examinations and the development of awards;
(h) To maintain effective liaison with overseas certifying and validating bodies, in order to recognise overseas educational and vocational qualifications in New Zealand and to achieve recognition of New Zealand educational and vocational qualifications overseas;
(i) To ensure that post-school educational and vocational qualifications maintain international comparability;
(j) To promote and monitor inter-institutional course approval and

moderation procedures;

(k) Such other functions as are conferred on it by this Act or any other enactment;

(l) To consult such persons, authorities, and bodies as it considers appropriate for the purposes of the performance of any of its functions.

The National Qualifications Framework NQF is currently being developed. More than 75 advisory groups are overseeing the writing of units. Somewhere between 500-1000 units are due for registration by the end of January 1993.

This development, and in particular its time-line, has created a number of tensions.

Such questions or views arise as:

- who determines the standards?
- units lead to atomisation of qualifications;
- competency is too narrow;
- degrees are unique to a particular institution, and therefore universities cannot be part of the framework;
- academic freedom is being compromised.

There is tension because industry is being looked to play a significant part in the determining of standards. Providers are not comfortable with this.

The NZQA is responsible under the Education Amendment Act 1990 for establishing a consistent approach to the recognition of qualifications in academic and vocational areas. Within this broad objective it is charged with overseeing the setting of standards, and monitoring and regularly reviewing those standards. It must also ensure that there are mechanisms in place which guarantee nationally recognised courses have assessment procedures that are fair, equitable, consistent and in keeping with the required standards.

In order to perform these functions, units and qualifications will be registered on the NQF through a public process requiring the endorsement of national standards bodies.

These bodies will be representative of all major users of the relevant units and qualifications and will have a central role in development and maintenance of standards in a field, sub-field or domain of the NQF.

It is anticipated that national standards bodies will progressively develop the following operational roles. They will:

- analyse skills and knowledge requirements for their sector;

- assume responsibility for establishing boundaries and mapping qualifications. They will identify areas of overlap with other national standards bodies and establish means of resolving issues that arise. This includes developing common unit standards where appropriate;
- undertake systematic analyses of the needs in their sphere of interest, and generate plans which:
  - detail mechanisms for development of units and qualifications;
  - set out the number and nature of units and qualifications required;
  - indicate areas of priority;
  - propose timetables for development;
- oversee the development of unit standards in the format required by the NZQA for registration in the public domain, and undertake sufficient consultation to ensure a wide acceptance of the standards;
- assist in the design, and participate in the operation of, quality management systems in consultation with providers and the NZQA in order to maintain nationally consistent standards;
- market new qualifications to their sector;
- make arrangements for the regular review of standards and qualifications.

This public process resulting in registration will ensure that the units and qualifications have been endorsed by those who use them. This requirement will apply to units which are specific to industries and to more general units and qualifications.

National standards bodies will normally include further education and training providers as users in their own right. In addition, providers have a place on standards bodies because their expertise in delivering standards provides essential feedback to enable the maintenance and enhancement of standards. This includes their role in research and scholarship.

Government sees the NQF as a central part of its Industry Training Strategy, which in turn is part of its economic development policies. The training of disadvantaged groups is government policy. Providers will only be eligible for this funding for disadvantaged groups if they are teaching units from the framework.

There is considerable unease among the colleges of education, polytechnics and universities about the relationship between the framework and degrees and diplomas. Concern has been expressed about describing courses at these levels in competency terms. However, the NZQA has been careful to stress that its focus encompasses knowledge as well as skills.

Definitional issues bedevil the debate, and tend to lose sight of two principles:

- the student has the right to know what she or he is expected to know or do;
- the student also has the right to know by what criteria he or she will be judged as having met these expectations.

Much effort has been put into the debate about the size or worth of unit standards. Concern has been voiced about the danger of atomisation and the loss of wholeness. Much of the debate has been characterised by the creation of strawmen, deploring the product, and accusing the NZQA for perpetrating such a thing!

Degrees are now being taught outside of universities. Through a NZQA process institutions and private training establishments have degree applications approved and accredited. Currently there are 32 NZQA approved degrees, covering such areas as business administration, divinity, ministries, international studies, Maori law and philosophy, health science, quantity surveying, accounting, commerce and fine arts, and available in polytechnics, a wananga and three private training establishments.

The legislation sets out the characteristics of a degree. This has been amplified into a set of criteria which were formulated in consultation with the New Zealand Vice-Chancellors Committee (NZVCC) and other provider groups.

The committee and the NZQA have agreed to use the one set of criteria for degree approval. NZQA or NZVCC must satisfy itself as to the standard and quality of every course in regard to the following criteria:

(i) the acceptability of the proposed course to the relevant academic, industrial, professional and other communities in terms of its stated objectives, nomenclature, content and structure;
(ii) the adequacy and appropriateness of the regulations that specify requirements for admission, credit for previous study, recognition of prior learning, course structure, assessment procedures and the normal progression;
(iii) the availability of appropriate academic staffing, teaching and research facilities, and support services;
(iv) the adequacy of the means of ensuring that assessment and appeals procedures are appropriate, given the stated objectives, and fair;
(v) the adequacy of the provisions for monitoring course standards and quality, for reviewing course regulations and content, and for determining whether the course shall continue to be offered.

In addition, the vice-chancellors have decided that when people are applying to study for higher degrees, they will treat NZQA approved degree holders equally with university degree holders.

An issue of the reforms dealt with accessibility, of tertiary institutions, and a number of reasons were given why certain groups were under-represented. Of particular note were the few Maori.

Many Maori and other disadvantaged groups were in Access and MAccess courses with unregistered providers. Today all of those providers are applying for registration and accreditation to teach units from the NQF. This is significantly driven by funding policy changes but also by the need to get the students on the qualifications pathway.

It will be apparent that reform as far reaching as ours has the effect of destabilising existing relationships. The wish of polytechnics and colleges of education was, and still is, to have the same high level of autonomy as they perceived to be enjoyed by the universities. The universities wished to retain their existing freedom.

The new central agencies, the Ministry of Education and the NZQA are at times viewed as wishing to re-establish the old, as existed under the Department of Education. This is certainly so when the funding agency, following government policy, wishes to follow certain priorities.

It will take time to establish the new relationship. In the meantime the relationships will be fraught.

The legislation has exacerbated the natural tension created by the changes it put in place. On one hand it stresses academic freedom:

> the intention of Parliament in enacting the provisions of this Act relating to institutions that academic freedom and the autonomy of institutions are to be preserved and enhanced (section 161).

Yet this must be balanced with the clauses of the long title of the Act, and section 247 of the Act, which states:

> The object of the provisions of this Act relating to the Authority is to establish a consistent approach to the recognition of qualifications in academic and vocational areas.

I have attempted to set before you some of the experience of the last two years of the reforms in tertiary education reform in New Zealand. By necessity it is not comprehensive, but I have tried to give you some sense of a newly evolving system adjusting, to some extent painfully, to new realities. It is very difficult for those in the middle of the changes to be able to give an Olympian view, and the old joke of swamps and alligators seems very apt at times.

The goals are valid, progress is being made.

5 Policies and practices in vocational education and training in Australia

John Stevenson

Introduction

The Australian Government's skill formation policies have arisen as a response to its perceptions that Australia has lost its relative international trading position. The government believes that this economic situation is caused by a lack of appropriate skills in the workforce. To overcome the problems, it has spearheaded the restructuring of industrial awards in pursuit of broader skills. As an integral part of award restructuring, it has introduced competency-based training, which it believes will develop a skilled and adaptable workforce which, in turn, will innovatively add value to our primary and manufactured goods and to our services, so that we will be internationally competitive (Dawkins 1988; Dawkins and Holding 1987; Minister for Employment, Education and Training 1989).

While skill formation policies are particularly influential for vocational education and training, it is becoming increasingly obvious that they will also be pervasive and have significant implications for all other educational sectors. Some aspects which impact on education and training generally are:

- the overall assumptions about education on which the policies are built, which may influence the content and emphasis of all existing sectors of education;
- the identification of key areas of competence and key competency strands (Finn 1991; Mayer 1992a, 1992b) which may influence course content, teaching practices, assessment and credentials (Employment and Skills Formation Council 1992);
- the proposed Australian Vocational Certificate System (Carmichael 1992) which may influence the pathways taken by post-year 10 students, and, in turn, the curriculum provided for these students;
- the Australian Standards Framework (The National Training Board 1991) which may influence the nature of courses from certificate to postgraduate degrees, especially as they relate to delineated characteristics of corresponding occupational levels;

- the development of competency standards for the professions which may have implications for university programmes.

Overall aims of skill formation policies

Since 1987, the Australian Government has argued that the key to better living standards is greater domestic production of high value added goods and services which are traded internationally (Dawkins 1988, p.1); for which the country needs a highly skilled and flexible labour force (Dawkins 1988, p.1); and broader and higher level skills, at all levels of the design, production, management and marketing processes (Dawkins and Holding 1987, p.5), for example:

- vocational competence and adaptability of skills (Dawkins and Holding 1987, p.7);
- less measurable skills on which future prosperity depends—life-time learning, enterprise and initiative, pursuit of excellence, communication skills, teamwork and responsibility (p.9); and
- broad and transferable skills, and attitudes which equip the workforce to adapt to and influence change (p 9).

These aims and the ideas underlying them dominate subsequent government policy documents (e.g. see Minister for Employment, Education and Training 1989; National Board of Employment, Education and Training 1989b). The development of the nominated skills is regarded as the primary role of education (especially vocational education). The concepts underlying these policies have been modified over the last five years so that the call is now for both intellectual and manual 'competence':

> . . . being clever is as much about our capability to be manually dexterous, technically proficient and industrially innovative as it is about being intellectually excellent . . .
>
> Cleverness is not purely about grappling with theoretical matters. Indeed there is nothing clever about a nation that is not capable of implementing bright ideas and that does not have the dexterity or know-how to deal capably with problems in the work place and in industry (Dawkins 1992, p 9).

This kind of statement is not unique to the Minister, the Australian Government or even government in general. For instance, the wording of occupational classifications in the Australian Standards Framework (National Training Board 1991) closely parallels the wording used to describe the five National Vocational Qualifications proposed in the British White Paper on education and training for the 21st century (Secretaries of State for Education and Science, Employment and Wales 1991). Similarly in

the United States, the re-authorisation of the Perkins Act is prompted by such concerns as the relevance of vocational education to economic imperatives (for example, see Raizen 1989). And, internationally, the discussion about skilfulness and cleverness is increasingly being led, not by educationalists (who seem to be bystanders), but by governmental spokespersons outside education, and by those who purport that they represent industry. In fact, teachers and trainers are seen primarily to be implementers.

Clearly, the equation made between economic and educational goals, the values which have been adopted, the assumptions about the nature and role of knowledge, and the conceptions of cognitive structures, their acquisition and their use are all debatable, and need closer analysis.

In this paper, I want to draw attention to the economic assumptions, challenge the role assigned to knowledge and education, and disclose the ways in which the government has used discourse to exert control over educational criticism. Finally I want to argue that, even if the government's assumptions were correct, competency-based training (CBT) and its associated paraphernalia will impede the attainment of governmental goals.

Economic assumptions

The government's economic imperatives are adopted in a philosophical vacuum. They are based on assumptions that do not treat as problematic any important economic questions such as the scarcity of physical resources, the definition of economic growth, the growth of the managerial, scientific and technological intelligentsia, and capital accumulation (for example, see Harvey 1990).

From the consideration of such questions, one would expect associated questions such as whether more, and more efficient, exploitation of physical resources is desirable. As Kell (1992), drawing on Jones (1982), Coombs (1990), Apple (1987) and Gorz (1989) argues, there are alternative assumptions on which one can build economic policy; for example, we may need to reduce our excessive use of resources, and learn to do less with less in a 'post-industrial conservator society', rather than more with less or more with more.

We will all have to decide whether we agree with the economic analysis of the government that the secret to our success as a nation lies in our continued exploitation of scarce physical resources, adding economic value before export, in competition with other countries all trying to do the same thing. We need to decide if the spectacle of farmers ploughing into the earth crops they cannot sell, killing sheep no one wants to buy, and

stockpiling wool no one wants to use is sensible or responsible in a world (even in our own country) where vast numbers of people are starving, poorly clothed and poorly housed. We need to decide if we can live with the destruction, alienation and polarisation that this approach is producing in our society. We need to decide if, rather, governmental economists should find the key to economic success in solutions which value conservation, sensitivity, cooperation, caring, sharing, valuing leisure and activities which add quality to our lives, supporting small-scale enterprise, and pursuing interests unable to be defined or taught as competencies.

We need to be concerned that an exclusive focus on micro-economic reform may lead to future employment being available only to a small core of highly paid, well trained professional and technical elite, with the remainder of jobs being casual, part-time and deskilled. And even if the economic goals could be legitimised, the equation between these goals and the development of a skilled and adaptable workforce cannot be assumed.

Assumptions about the nature and roles of education and knowledge

Thus, the second perspective I would like to touch on examines the assumptions about the nature and roles of education and knowledge implicit in government policy. Clearly, the government views the sole role of vocational education as being preparation for economically productive activity. It ignores the problematic nature of such questions as:

- What is the purpose of (vocational) education?
- Who should be afforded the opportunity to provide input to the content of (vocational) education?
- At which goals should courses be directed?
- What relationships are there among individual, industrial and social goals; and what values underlie these goals?
- What knowledge is implicit in these goals? (Stevenson 1989)

Indeed, failure to answer such questions adequately has led to a situation where different philosophies seem to underpin different categories of courses offered in the TAFE sector, with legitimacy couched in such different terms as meeting the skill needs of industry, meeting individual needs for self-fulfilment and meeting the needs of society. Similar questions arise about the artificiality and inapplicability of an economically constructed interface between higher education and technical and further education (Stevenson 1987).

While Brookfield (1992) would distance himself from the singular ideological commitment of some critical thinking and Lyotard (1984) would object to the

sufficiency of consensual norms for legitimacy, both of these authors would nevertheless embrace critical theorists' rejection of the scientistic or technocratic assumptions underlying the government's equation between economic goals and the role of knowledge. And of course this rejection has been common in general education since the time of Dewey (1916) (for example, see Tanner and Tanner 1975).

It is easy to reject purely utilitarian or instrumental concepts of general education in the name of the need for a broad education, a focus on the individual and a focus on the nature of knowledge itself. What is more difficult is to make the same arguments for non-school, post-compulsory education and training. Of course, when one does not make the same arguments for non-school education and training, the differentiation itself defies the logic underpinning the view of general education. For instance, it is hard to sustain a view that the education of apprentices should be primarily concerned with the acquisition of the skills needed in the workplace for economic productivity, and yet insist that the needs of 15-17 year olds in schools are more legitimately concerned with such goals as negotiating meaning and preparation for a wider pro-active role in society.

The value of education in the government's adopted CBT paradigm lies entirely in being able to train students to perform in ways prescripted by industrial representatives on competency standards bodies. In adult learning theory, this approach would be called technological (Blachford 1986; Millar 1991), or training and efficiency (Boud 1987). It is concerned with performance, efficiency, modernisation, moulding, instruction and improving production. There is no room to overcome meaninglessness, barbarism or oppression; no room to emphasise growth, initiation into new forms of knowing or empowerment; no room for the educator to see the primary role as one of support, conversation or conscientisation; no room for such goals as wholeness, ability to make judgments or ability to take action to improve or transform society; and no consideration of such values as acceptance of others, reason or freedom (see Millar 1991). Are all of these irrelevant to work or the roles workers adopt in our society? Are all these irrelevant to adaptability, innovativeness, flexibility, teamwork, responsibility, pursuit of excellence, communication and initiative?

Apparently, in the government's view, the role of vocational education is to reproduce—reproduce practices in industry, adapt to changes in industry generated by others, reproduce social classes, reproduce injustice, disempower dissidence, and shape and discipline the population. Clearly, the only form of legitimisation of content to be taught or learned is approval by new, but seldom seen gods, the self-appointed spokespersons for industry.

The use of knowledge in the exercise of power and control

The third perspective for analysing assumptions underlying the government's policies is that of power and control. The national educational agenda is explicitly about what is called reform—that is the government has openly declared that its agenda is to bring about, in education, a greater emphasis on performance of prescribed tasks and an alignment of that performance with perceived economic needs. As Barry Jones (1982) would say, this is education for 'outer life' rather than 'inner life'. However, what is not declared is that a substantial part of the movement in that direction will be controlled through the institutionalisation of language, and that reform is used in the 'reform school' sense rather than the 'reformation' sense.

The concept that discourses and practices shape and render us governable (Ball 1990; Foucault 1979b) seems to be confirmed by analysis of the terms we find in governmental reports. Consider the following legitimised words for the development of the attributes and abilities which are required for the workplace:

- The word 'training' now has the status almost of a generic term encompassing such 'less general' concepts as 'education', 'growth' and 'development';
- The term 'competencies' has become a generic term for knowledge, skills and applications (see National Training Board 1991);
- 'Skill' is taken to include all levels of manual, motor, perceptual, intellectual and social procedural knowledge (National Training Board 1991). And, of course, there is something axiomatic about such attributes being observable and measurable as outcome performances, at the level of specified criteria, called competency standards;
- 'Adaptability' connotes multi-skilling, i.e. the possession of multiple sets of skills *usually at the same level*; and the transfer of credit from one learning situation to another. The even newer legitimised words for such individual development are 'broad-skilling' or 'upskilling', where upskilling refers to the acquisition of a competency which comprises approved performance in a higher occupational category.

And then there are the words for the nature and purposes of the education and training system, itself—'skill formation', 'credit transfer', 'training delivery', 'delivery units', 'providers', 'quality control', 'recognition of training', a 'level playing field', and 'reform'.

A clear example of how old vinegar has been served in new bottles is in the focus on competency. Despite protestations that competency-based education is not Taylorist, Skinnerian (Skinner 1954) or Magerian (Mager

1962), in all cases it refers to observable and measurable outcomes. In all cases, the literature asserts that the processes whereby these demonstrable abilities are acquired are not important. Rather, the curriculum development secret lies in being able to construct objectives which:

- describe outcomes in terms of performance
- express measurable criteria against which performance can be assessed
- are not vague or general.

These objectives are all in the best Taylorist tradition.

Drawing on Foucault (1974, 1981, 1982), Ball (1990, 1992) would designate this approach to change as the use of power-knowledge (knowledge developed by the exercise of power and used in turn to legitimate further exercises of power). He draws attention to the way current economic theory has enabled governmental control of populations to achieve political obedience and a docile workforce, useful for the demands of capitalism and the state; and how the creation of associated institutions has led to the development of knowledge which both empowers and enslaves the person-subject holders of that knowledge (Ball 1990).

From an analysis of contemporary governmental action in the United Kingdom, Ball (1992) argues that the nationalisation of curriculum development, standardisation, and pedagogical decision-making affects all message systems of education (Bernstein 1971)—they increase the technical aspect of teachers' work, reducing professional elements; they reduce spaces for professional autonomy and judgment; and they impose standardisation on curriculum practice.

It is clear, then, even from a cursory analysis, that a combination of similar related terms from management and from educational psychology literature have been adopted and applied to education and training to legitimised what is called 'reform'. Those who transact in these terms are empowered in the new order. They acquire the required concepts and can enact the required actions. At the same time, they are disempowered, or as Foucault would say, imprisoned by the institution which the terminology creates. The terminology itself renders the paradigm unassailable. The discourse circumscribes what is admissible within its boundaries (Harvey 1989).

There is no room for discussions of the nature of knowledge and its construction, the role of values in society, the nature of work, the effects of technology on society, power and control, ideology and so on. In addition, criticism is not accepted whenever it uses terminology which lies outside official discourse (education, freedom, fulfilment, problem-solving, qualities, learning, students, conceptual understanding, higher order thinking, cognitive processes, knowledge, debate).

The nature of official discourse in the context of CBT, then, renders those who adopt the paradigm unable to perceive the relevance of educational thought outside the paradigm, or to relate it to the paradigm. It also impedes those without an exclusive focus on observable and measurable learning outcomes in communicating about values and concepts of the role of knowledge which lie outside the paradigm. As a result, criticism and other research are often labelled irrelevant, or out of touch, or too 'academic'. That is, they are constructed as 'other'.

It is of considerable concern that the official language used in the era of CBT renders adherents unable to encompass in their thinking, knowledge developed over decades of educational research and writing; and that such disempowerment has occurred, almost predictably, in cycles over the last century. Indeed, patterns in the language used in education can be related to patterns in educational concerns. Table 1 makes these patterns clear (Stevenson 1992b).

CBT as the tool of economic recovery

In this section, I want to turn to the final thrust of my paper, and criticise the government's skill formation policies in its own terms. That is, I want to ask the question, even if the economic goals were appropriate, and even if the role of education is to assist in securing those economic goals, is the competency-based training paradigm, and its associated paraphernalia, the approach which will deliver an internationally competitive, skilled and adaptable workforce. The basis I will use for examining the equivalence between policy and likely educational outcomes is cognitive psychology.

As outlined above, the government's educational goals are a 'highly skilled and flexible labour force' (Dawkins 1988, p.1); and broader and higher level skills, 'at all levels of the design, production, management and marketing processes' (Dawkins and Holding 1987, p.5), for example:

- vocational competence and adaptability of skills (Dawkins and Holding 1987, p.7);
- less measurable skills on which future prosperity depends—life-time learning, enterprise and initiative, pursuit of excellence, communication skills, teamwork and responsibility (p.9);
- broad and transferable skills, and attitudes which equip the workforce to adapt to and influence change (p.9).

Table 1: Historical patterns of concerns in education

Indicators of educational debates	Indicators of national and international governmental concerns	Indicators of Australian vocational educational concerns	Concepts of educational goals
	Depression, 1890	Emergence of mechanics institutes and schools of arts	Stimulus-Response Associationism (Thorndike 1906)
Individual Development 1: Fullest intellectual and social meaning of work (Dewey 1916)	World War I	Technical colleges in departments of education	Beyond specific skills to problem-solving ability, meaning
Relevance of Education 1: Scientific efficiency (Bobbitt 1924; Charters 1924)	Post-war reconstruction, Great Depression		Routinised automated manual dexterity
	World War II	Use of technical colleges in the war effort	Manual dexterity, related to industrial demands
Individual Development 2: Tyler 1949	Post war reconstruction	Financial deprivation of technical education	Plurality of legitimate outcomes
Relevance of Education 2: Behaviourism (Mager 1962; Skinner 1954)	Depression	Behavioural objectives. Surveying industry's needs. Martin Report (1964), creating a relevant advanced education sector	Observable, measurable performance on predicted tasks
Individual Development 3: Humanism (Maslow 1971; Rogers 1969) Adult learning (Knowles 1979, 1980)	UNESCO Report on Learning to Be (Faure *et al* 1972)	Kangan Report (1974), meeting industry's needs through the individual	Holistic individual development
Relevance of education 3:	Depression, 1983	Fast, responsive occupational needs analyses (Blachford, 1986)	Functional competence at work
Individual Development 4 and Empowerment: Critical Theory in Adult Education (e.g. Boud 1987; Brookfield 1988)	OECD Report on Competencies Needed in Working Life (OECD 1980)	Life skills, participation and equity, social justice	Freedom through learning, empowerment; Adaptability, creativity, innovativeness,
Relevance of Education 4: Industry driven education	High levels of youth unemployment	Competency-based training (The National Training Board 1990, 1991) National Skill Levels, Credit Transfer, Consistency Integration of post-compulsory education and training (Finn 1991; Mayer 1992a, 1992b)	Observable, measurable performance to industrial standards

Source: Stevenson, J.C. (1992). Student assessment in TAFE: confusing relevance with responsiveness. *Australian Journal of Education*. (In press)

While the Government, especially through the work of the Mayer Committee (1992b), seems to be gradually recognising that such attributes comprise not only expertise in handling immediate and familiar tasks, but also expertise in solving the problems which make new tasks and situations unfamiliar, it does not seem to understand the learning implications. Specifically, it continues to ignore research findings that adaptability involves transfer, and that transfer is an interpretive problem (Pea 1987), requiring:

- deep conceptual understanding, especially understanding which enables recognition and categorisation of problems (Collins, Brown and Newman 1989; Glaser 1984; Gott 1989); and the application of personal and social epistemologies about what learning and knowledge are (Greeno 1989);
- specific automatic routine procedures (Anderson 1982; Scandura 1981), not only for routine execution but also for use in tackling known categories of problems;
- higher order analytical and problem-solving procedures (Anderson 1982; Scandura 1981; Evans 1991; Stevenson 1986a, 1991);
- higher order executive procedures (Evans 1991; Stevenson 1986a, 1991).

Nor does the government seem to recognise the importance of learning processes in developing these attributes. It seems to reject research evidence that the development of competence in the form of expertise and adaptability requires an emphasis on problem-solving, in the learning tasks and processes, so that:

- the complexities of real-life situations are encountered and approached as problems (Gott 1989; Glaser 1984; Lave 1989);
- there is an intermingling of propositional (a rich knowledge base) and higher order procedural structures (general cognitive skills) so that they become associated (Perkins and Salomon 1989);
- problem categorisation occurs (Chi, Feltovich and Glaser 1981) in a culturally influenced way (Pea 1987);
- higher order procedural knowledge is developed (Stevenson 1986b).

The government has ignored evidence that transfer is weak when one relies on the 'low road' (Perkins and Salomon 1989, p.22) (extensive and varied practice of a skill to automaticity, applied to conceptually similar situations by response or stimulus generalisation). It does not advocate the 'high road' which depends on deliberate mindful abstraction of principles, and general strategies for their use in problematic situations. Even if the 'low road' were adopted by the government, natural situations, like the workplace in which the government has so much faith, does not meet the required conditions of much practice in a large variety of situations, in order to lead to a high level of mastery and near automaticity. As Perkins and Salomon argue, general heuristics that fail to make contact with a rich domain of specific knowledge are weak; but when a domain-specific knowledge base operates without

general heuristics it is brittle—it serves mostly in handling formulaic problems.

If the government recognised the importance of learning tasks and processes in developing the cognitive structures which are the key to its economic goals, it could not adopt CBT, which devalues such processes and focuses exclusively on the development of attributes which can be demonstrated and measured as observable performance on prescribed tasks. Its assumption that CBT, as presently conceived, can deliver these attributes is unsound.

A further flaw in the government's approach, from a cognitive perspective, is its failure to emphasise the sociological aspects of transfer. That is, as Pea (1987) argues, transfer should be regarded as an interpretive problem. Firstly, it involves socio-culturally defined decisions about the appropriateness of transfer for particular purposes, tasks and thinking situations. Secondly, the perception of similarity between a prior situation and the current one are read as texts with multiple possible interpretations according to the thinkers' culturally influenced categorisation system of problem type. There is no room in the government's approach for such individual differences when seeking to develop the ability for transfer. Rather, pre-specified standards for observable performance are set, and achievement is expressed only in these terms.

Furthermore, the government supports modularisation of vocational education. The disaggregation of knowledge which this entails also has serious implications for transfer (Stevenson and McKavanagh 1992).

Conclusions

In this paper, I have outlined the essential aspects of the government's skill formation policies and argued that the assumptions underlying the economic goals, the role assigned to knowledge and to education, and the government's exercise of power and control need criticism. Then I argued that, even if the policies were appropriate, their attainment would be jeopardised by the CBT paradigm, and its associated paraphernalia such as modular curricula.

In my analysis of the assumptions underpinning current policies, I claimed that the economic assumptions seem not to have been debated and seem not to take account of the nature of a post-industrial conservator society. From the discourse which is used to transact about education, I suggested that the assumptions are technological, technicist or scientistic, legitimising through the institutionalisation of a new kind of language. This exercise in power and control can be related to similar episodes over the last 100 years. For instance, the power of the construct of relevance, in legitimising adopted

emphases, has led to a distortion in the concerns of vocational education and assessment, in particular, in TAFE (Stevenson in press (c)).

Thus, it is not only the case that government policy on skill formation be linked to outdated economic goals, it is also the case that the government has adopted a view of education and knowledge which is technological or technicist, which serves to prescript learners, and has become an ideology which disempowers both its adherents and critics. It renders unproblematic questions about the nature and purpose of vocational education and education in general.

And finally, even if the thrust of the government were appropriate, the associated educational paradigm has blinded those within the paradigm to the contribution of cognitive science to knowledge about the educational tasks and learning processes which would achieve the government's goals. Thus, the policies are condemned in their own terms.

Where then is the way forward? What is needed is a more deliberative working through of the questions ignored in current policy; for example, equations between economic goals and education, the role and content of courses, and the role of courses in society. Processes such as these are more likely to lead to more appropriate governmental goals and a greater congruence between goals and actions. The future of technical and vocational education depends on more open debate and this requires less circular legitimisation of discourse. Without such re-conceptualisation, the relevance of the sector is questionable.

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6 Influences and trends in the Liberian vocational/technical education system: prospectus for the nineties and beyond

Jeremiah Witherspoon

Introduction

History/characteristics of the paper

The decision to present this paper was prompted firstly by recent developments in the vocational/technical educational system of Liberia. The recent civil war which raged in the country during 1990 had devastating consequences for vocational and technical training in Liberia. Destruction to infrastructure and damage to training equipment, resulting from looting and pillage, were immeasurably catastrophic. Training institutions are at present lying in ruins, only awaiting the generosity and magnanimity of donor organisations and friendly governments for their revitalisation. Secondly, we are motivated by the opinion that there is a strong linkage between the vocational/technical educational system of Liberia and the training system of the world. As part of this global system, therefore, we feel that if we strengthen our own system here in Liberia, we will also be providing a bright future for training the world over.

Part of the paper focuses on the relationship between the growth of industrial activities and the establishment and growth of vocational and technical education in Liberia. In Liberia, there is a correlation between growth and development of economic activities and the establishment of vocational and technical training. When the Liberian economy began to expand in the 1950s and 1960s, many investment projects were started, resulting in a significant increase in productivity. Conversely, however, serious constraints were placed on the proliferation of these investment projects, both in the public and private sectors, due to the lack of a skilled and qualified workforce. The resultant effect was a reliance on the

importation of foreign workers to satisfy the demand of the growing industries and, ultimately, a repatriation of huge amounts of foreign exchange. Thus, the need to develop a mechanism to locally train an indigenous workforce became urgent.

The final portions of the paper look at the future for vocational and technical education in Liberia. The civil crisis destroyed the fabric of a training system and will cost enormous amounts of money to restore; also, there is an apparent 'brain drain' which could have serious consequences for future training in Liberia. If the vocational and technical educational system of Liberia is to have a better and brighter future, these constraints and setbacks must be righted. Training schools must be rehabilitated and put back into use; new directions must be charted so that the training provided will be more relevant and attractive to the communities they serve; and training institutions must become a business, attracting new customers daily and working hand in hand with other members in the business community so as to create a more healthy and wholesome business climate. This is the future for technical and vocational education and training in Liberia.

Working definitions

Liberian vocational and technical educational system: for this text, this means the whole embodiment of vocational training and management in Liberia.

Vocational and technical education: means the institutionalisation and process of providing and imparting vocational and technical education and training.

Brief historical trends in development

Liberia is situated on the West Coast of Africa, sandwiched between the Republic of Sierra Leone on the west, and the Republic of the Ivory Coast on the east, while the republics of Guinea and the Ivory Coast straddle the north. There is a coastline of about 583 kilometres.

The country was founded in 1822 by freed slaves from North America, and in 1847, Liberia declared its independence. The population, according to a 1984 census report, is about 2 101 628 (NPC 1989) with a growth rate of 3.3 per cent (MPEA 1981). These comprise some 14 different ethnic groupings, including the settler group which ruled the country from independence to 1980 when the leadership was overthrown in a military coup led by a Master Sergeant of indigenous origin. In 1986, the country returned to civilian authority under a new constitution, but this too was disrupted in 1989 by a rebel incursion which erupted into a civil war in 1990. This latest

development has created a stalemate which lingers to date. The literacy rate of the country stands at about 31.4 per cent and the school age population group makes up about 50 per cent of the population (NPC 1989).

Liberia is rich in natural resources notably, iron ore, rubber, timber, diamonds, gold, oil palm, coffee, cocoa, etc. Iron ore, rubber and forest products are the major export earners, accounting for about 70 per cent of all export earnings and about 50 per cent of the nation's real GDP in 1988 although since the early 1980s there has been a persistent general decline in export earnings due to the fall in prices of the nation's major export commodities. (MPEA 1989).

Growth and expansion of the Liberian economy

The Liberian economy exhibits a dual characteristic with a modern and prosperous enclave sector co-existing with a traditional sector. The modern enclave sector is dependent and maintained exclusively for production for exports and for imports used for production and consumption, thus requiring technological skills for its sustenance. The traditional sector on the other hand, consisting predominantly of the rural population, produces little and requires little or no specialisation or significant skills (Witherspoon 1981). This structural imbalance continues to characterise the Liberian economy (MPEA 1989).

The growth of the Liberian economy, particularly the enclave sector, began in the 1940s with the advent of iron ore mining in the country. By the 1960s and early 1970s, economic activities in the country were expanding rapidly, showing an annual growth rate of 3 per cent (McIntosh 1976). With this new economic activity came a new demand for specialist and middle-level skills and technical know-how. Many large and medium-scale industries in the private sector needed a skilled workforce while in the public sector, development projects that were started had as their single main constraint the lack of qualified personnel.

At the time, the country was unprepared to cope with the growing disparity between the rapid growth of the economy and the unavailability of a skilled workforce to satisfy the demands of the proliferating industries.

Impact of expatriates on the Liberian economy

To address this scarcity of skilled workers, the government launched a number of vocational training programmes, but these only catered to students who had some formal educational training, starting from high school graduates. It soon became apparent that while the government was training higher middle and senior level vocational/technical workers, severe shortages developed in lower middle-level skills jobs. As a result, a number

of entrepreneurs started bringing in trained foreign workers to operate their factories. In 1976 the Ministry of Labor reported that there were 4000 aliens working in the non-agricultural sector of the economy (MOL 1976). This accounted for about 2.3 per cent of the total workforce of about 175 000 within the sector. By 1979 the number of aliens working in the non-agricultural sector had jumped to 14 412. There were about 39 253 expatriates working in the entire employment sector of Liberia during the same period (MPEA 1981).

This figure, at first sight, may seem insignificant and unimpressive; however, it must be noted that these expatriate workers were occupying dominant positions in most important sectors while their Liberian counterparts were generally concentrated in the lower and semi-skilled ranks with the majority being labourers (MPEA 1981).

As a result, millions of dollars were lost in the form of remunerations and other benefits paid out to expatriate workers. This problem was exacerbated by the Investment Incentive Code, which placed no restriction on the repatriation of profits and remunerations. Millions of dollars in foreign exchange are repatriated and lost in this way.

Towards a workforce development policy

It was soon realised that Liberia's greatest workforce needs were for people who had acquired basic skills in a non-formal educational environment. The lack of an effective non-formal educational system had prevented the acquisition of needed skills and encouraged a reliance on foreign workers to fill the gap. In 1975, the government was spending about 13 per cent of its total expenditure on formal education. Eighty-nine per cent of funds spent on educational training in the same year was spent through the Ministry of Education, of which only 14.7 per cent was used for vocational/technical education (Collins 1981).

To ameliorate this problem and to bridge the disparity between the growth of the economy and the availability of skilled workers, the government of Liberia decided to encourage Liberians to pursue training programmes in vocational and technical disciplines basic to the economic activities of agriculture and industry. Consequently, the government started a number of training programmes throughout the country and established a National Council for Vocational/Technical Education and Training (NCV/TET) with the Agricultural and Industrial Training Board (AITB) being set up within the Council as its administrative arm. Details of the functions of the NCV/TET and its administrative arm are discussed in a latter portion of the paper.

To buttress these efforts, the government launched the Liberianisation Policy, aimed at systematically replacing expatriate workers with Liberians possessing similar skills and qualifications to ultimately reduce Liberia's dependence on foreign workers. The Ministry of Labor has as part of its functions the responsibility to find employment for Liberians who are desirous of working in the private sector. The Institute of Public Administration (IPA) and the Civil Service Agency were also established to help improve public sector training and personnel management.

Establishment and growth of vocational/technical education in Liberia

Philosophy

The seemingly growing disparity between the expanding economic activities and the availability of trained workers, as well as the desire to Liberianise jobs held by expatriates, sparked off a new philosophy for training in the country. The government had launched a number of training programmes and had embarked upon a nationwide long-range plan for improving, expanding and creating new vocational/technical institutions throughout the country. These training programmes and institutions were designed primarily to provide skills for the industrial and agricultural sectors of the economy. The objectives were to provide the local industries with their workforce needs, to reduce Liberia's reliance on the importation of foreign workers and to promote entrepreneurship among Liberians through the use of acquired skills. These training programmes and institutions were also intended to provide industries with both entry-level and middle-level skilled technicians, also capable of replacing expatriate workers.

The overall goals set for vocational and technical education are found among the general educational goals of the country. There are, however, particular goals which the government addressed in its Second Four Year National Socio-Economic Development Plan, 1981-85. These goals are:

- the promotion and creation of industrial and commercial employment opportunities, with priority given to labour intensive small scale enterprises of Liberian nationals;
- on-the-job training programmes for managerial, professional and technical positions;
- the strengthening of technical and vocational training, by continuing along the lines begun with the setting up of the National Council for Vocational/Technical Education and Training and the Agricultural and Industrial Training Bureau.

These statements of goals clearly define the philosophy behind the establishment of vocational and technical education in the country.

Expansion and explosion of vocational/technical schools

By the turn of the 1970s numerous training institutions were established throughout the country. Apart from the training programmes established by the government, many vocational and technical schools were established by private individuals, institutions and business enterprises. Major companies like the Liberia/American Mining Company (LAMCO) and Bong Mining Company (BMC), two big corporations doing extractive iron ore mining in Liberia, were active in establishing vocational training schools within their concession areas to provide locals with the technical know-how critical to their operations. Other schools are providing training basically for occupations in the service industry: secretarial science, accountancy and bookkeeping; and quite recently, computer operations and word processing.

The government's efforts are centred around the activities of the Ministry of Education and the Ministry of Youth and Sports under whose auspices a number of centres and programmes are being operated. There are now over 28 vocational training programmes receiving government support (see Appendix Table 1). The government has committed a substantial amount of its resources to the development of vocational and technical training in Liberia and outside donors have invested over $6 million in vocational and technical education projects, notably through the World Bank and United Nations organisations (MPEA/MOE/USAID 1988).

In total, there are well over 48 programmes in the country involved in training and providing skills for entry and middle-level jobs (MPEA/MOE/USAID 1988). See Appendix, Table 2.

Establishment of control and standardisation mechanisms

With the rapid growth within the vocational and technical educational system, the need soon arose to put in place a control and standardisation mechanism that would monitor and regulate training programmes and ensure good quality and high standard within the vocational and technical sector of the educational system of the country. By 1980, the government began to take active steps to coordinate and monitor vocational and technical training at the national level and, in 1981, the government of the People's Redemption Council restructured the National Council for Vocational/Technical Education and Training (NCV/TET) through PRC Decree No. 56, which also set up an administrative arm within the Council known as the Agricultural and Industrial Training Bureau (AITB).

The council's overall objectives are to 'promote, regulate and coordinate a balanced development and expansion of Vocational/Technical Education and Training consistent with the manpower needs and requirements of Liberia' (PRC Decree No. 56, 1981). As the administrative arm, the AITB was given broad powers to regulate and monitor all phases of vocational/technical education and training within the country. In carrying out its functions, the AITB has created a mechanism for establishing national standards for occupational skills and training, a testing and certification process for applying these standards and a procedure for reviewing and accrediting all vocational and technical education and training programmes in the country.

Impact on growth of industries and the economy

The impact made by the vocational and technical educational system on the growth of the industries and the economy can be studied from trends in the demand in the employment sector and the contribution to that sector by vocational and technical training.

Between the period 1976 to 1979, total employment in Liberia grew from 600 000 to 662 000. By 1984/1985, demand for labour from the industrial sector was 724 000, showing an increase of about 48 000 from 1980. This figure shows that between the period 1980 and 1984 there was an annual average demand for labour of about 9600 from all major industrial divisions. During this same period, between 1979 and 1985, total output of graduates from vocational and technical training institutions was 8368, or a yearly average of about 1195 (see Appendix, Table 3). Compared with the annual average labour demand of 9600, vocational and technical training contributed only about 12.5 per cent of the total annual average demand for skilled workers.

This low contribution to the labour demand presents a great problem for the Liberianisation Policy of the government and economic growth and development of the country. The Liberianisation Policy was instituted to provide a systematic replacement of all expatriate workers with Liberians possessing similar skills and training. The objective of this policy was to maximise the opportunities of Liberians to meet the nation's workforce requirements while at the same time ensuring growth and development of the economy.

Although there have been in recent years vigorous efforts to Liberianise the upper-level positions in the economy, the intermediate level accounts for about one-fifth of all jobs available, a category in which expatriates continue to dominate. These expatriate workers cost a great deal in foreign exchange to maintain and, to a great extent, millions of dollars are repatriated in the form of remuneration, profits and benefits.

These issues raise many questions about the structure of the vocational and technical educational system and the relationship of the system to the industrial sector. The question of the structure will be discussed in another section.

Studies have shown that in order for any vocational and technical educational system to thrive, there must be a well placed and coordinated linkage between the system and the economy. There must be a two-way information flow between the two, each providing the other with information about its activities. The system must know at all times about the kinds of industries and their needs, such as the kind of technology required and the level of trained workforce needed. The industries must also be aware of the kind of training available in the system and the quantity and categories of trained workers available.

Experience has shown that this information flow is not the case in Liberia. Recruitment for on-the-job and apprenticeship training is often done without consultation with would-be employers and without taking account that in recent years there has been a general decline in the economy. Consequently, and in most cases, training often exceeds what industries can absorb and as such poses serious difficulties for placement officers. It must be noted also that the diversity in the control and management of training also adds to the problem. Where there are many institutions conducting similar training and competing in the same limited market, surplus is bound to exist. The issue of structure within the vocational and technical educational system must therefore be addressed.

Setback from the Liberian civil crisis

The Liberian Civil War which raged in the country during 1990 had a devastating effect on education and training. At all training centres, severe damage was done to buildings and infrastructure; and training equipment, other machinery and furniture were looted and pillaged.

Training centres provided opportunities for vandalism. Machines and equipment at these centres were easy targets for vandals and looters. Buildings which were unoccupied provided shelters for displaced people and at worst, roofs of vacant buildings provided materials for looters.

Preliminary assessments have been conducted at major centres to ascertain the extent of the damage sustained. Results have shown that millions of dollars are needed to rehabilitate these centres and restore their training capacity. An example of the enormity of the damage is the Monrovia Vocational Training Center which provided industrial training for apprentices and industrial workers. It is estimated that in excess of US$1.8 million would be required for renovation and rehabilitation of these facilities.

Besides the physical damage experienced by the centres, personnel losses were equally significant. Directors or heads of centres, as well as senior instructional staff, were either murdered or forced to flee the country. At some centres, however, instructors who survived the carnage are gradually returning.

Losses such as these are causing some setback in the continuity of some centres and a slowdown of training activities in others. The International Labour Organisation of the United Nations (ILO) has recently conducted an assessment of the restoration requirements of vocational and technical institutions in Liberia and has expressed willingness to give technical assistance to the rehabilitation and restoration endeavours. It is hoped this, and other assistance will materialise.

Prospects in the aftermath of the crisis

As we have discussed earlier, vocational training in Liberia began with the advent of mining operations in the country. Since this beginning, and through its growth period, some major developments occurred which have created impediments in the vocational and technical educational system in the country. Over the years there has been a general decline in the national economy. This decline has brought a fall in government revenue; consequently, there is a constant short supply of consumable and instructional materials to centres. This condition sometimes affects the content of training and in most cases delays training cycles.

A second major development has been the withdrawal of major external donor agencies from vocational and technical training programmes. Over the years, these donor agencies, particularly the World Bank, invested over US$6 million in vocational and technical education projects. These projects were not confined to infrastructural development. The supply of instructional and consumable materials was part of these projects; hence, a discontinuation of operation by these donors meant that controlling agencies had to revert to, and rely on the government to make up the shortfall. A notable setback created by the withdrawal of the World Bank was the cancellation in 1985 of a US$2.5 million project for the construction of a clerical, business and domestic training centre.

A third major development is the structural arrangement for the management and administration of vocational and technical education in Liberia. We have indicated earlier that the management and administration of vocational and technical education in Liberia are spread among several government institutions. With a decline in the national economy, and the accompanying fall in government revenues, such diversity in the control of training institutions makes management more difficult and the allocation of

funds too sparse and inadequate. In 1987, the government allocated over US$600 000 to the various agencies for management operations. Appendix, Table 4 paints a better picture. This point indicates the need to take rational steps to improve the vocational and technical educational system and to more effectively and efficiently utilise the meagre resources that are available.

Outline of new policy for vocational/technical education development in Liberia

In Liberia, most vocational training programmes are set up for the youth and young people of school age. The distribution of accelerated training programmes in schools and the training activities of the Ministry of Youth and Sports are classic examples.

The Ministry of Youth and Sports has been providing effective management and oversight for vocational training over the years. When the ministry was created in 1972 as the Ministry of Labor, Youth and Sports, vocational training became the centerpiece of its youth activities. In 1974, when it became apparent that there was an imbalance in the Liberian economy, resulting from the shortage of strategic skills for the nation's development, ministry officials held negotiations with World Bank officials for the establishment of a vocational training centre that would help to reduce the existing imbalance in the economy. The Centre was later to be constructed by World Bank funding and today the Monrovia Vocational Training Center provides training for supervisors, upgrades the skills of industrial workers and trains apprentices.

This training aspect was later re-emphasised when the Ministry of Youth and Sports was separated from Labor in 1981 through the amendment by PRC Decree No. 36. The decree gave the ministry broad responsibilities to 'oversee the direction of the affairs of the youth of this Nation; to enable them to most effectively discharge their responsibilities as useful citizens of the Republic'. To achieve this major policy objective, the ministry is entrusted with the duty to 'provide and supervise all youth apprenticeship and vocational training in agriculture, business and industry in the Republic' (PRC Decree No. 36, 1981).

Armed with this responsibility to youth, the ministry has since 1974 established and is managing four training centres. For effective management, training activities are being controlled by a Bureau of Vocational and Technical Training, headed by an assistant minister. All directors of centres report directly to the assistant minister on their activities.

This central control seems attractive for the vocational and technical educational system of Liberia. We have seen that the present structural

arrangements for the management and administration of vocational and technical education creates the difficulty of management and reduces the cost-effectiveness of available resources. With a central control mechanism, funds and other resources can be channelled to one point and management of these funds and resources can be better monitored.

A second advantage of this arrangement is that international organisations and donor agencies will be rid of the burden of having to deal with many agencies when donating and providing technical assistance to training activities in Liberia.

A third advantage is that training quality and content would be more rigidly controlled and monitored; and a fourth advantage of this policy is that employers will have to deal only with one single body. As a result, a more personalised relationship would develop between employers and training institutions and, consequently, training packages would be developed with the participation of the industries. With their participation, these packages would be made more relevant to the needs of the industries.

With its administrative mechanisms and its experience in the management of training institutions and youth activities, the Ministry of Youth and Sports seems well placed to take over the control of all vocational training activities in the country.

In implementing this new policy, a transfer of all training activities to the ministry might not seem practical under the existing administrative organisation of the Ministry of Youth and Sports. Because of its recreational and mass appeal, sports seems to dominate the activities of the ministry. To avoid this dominance, the separation of youth and training activities from sports is not only necessary but imperative.

New role in the reconstruction of the national economy

Although the Liberian Civil War has ended, the road to economic recovery is still long and rugged. Much of the country's resource base has been destroyed and economic infrastructure dismantled. At the moment, programmes to revive and reconstruct the national economy have been put in place but are awaiting elections and a return to constitutional rule for implementation.

The vocational and technical educational system, in its reorganised structure, could play a pivotal role in this reconstruction exercise by forging a new relationship with the industrial sector and opening a broad communication link for a free flow of information. Through this relationship, industries would constantly be aware of the training programmes available and the training system would, on the other hand, be constantly aware of the

training needs of the industries. Upon this relationship a solid industrial and economic foundation could be built.

Role in the rehabilitation policy of government

The Interim Government of National Unity of Liberia has embarked on a vigorous effort to rehabilitate former combatants who were involved in the Liberian Civil War. A National Readjustment Commission has been set up to oversee this national effort. The rehabilitation programme involves, among many things, training and providing skills to the former combatants in order to make them more relevant to the society and marketable in the job markets.

The vocational and technical educational system could be more active in this aspect of the rehabilitation programmes. Training institutions could draw up short-term training modules outside their regular training programmes and conduct extra training sessions concurrent with their training schedules to meet this specific need of the interim government.

Conclusion

Suggested solutions for strengthening the Liberian vocational/technical educational system

In concluding, the following suggestions have already been discussed in the main text of the paper but are repeated here for emphasis and clarity:

1 That all training institutions currently spread among government agencies be brought under one agency for good management and cost-effectiveness.

2 Since the Ministry of Youth and Sports has long experience in management of training institutions and youth activities, the ministry should be put in charge of all training institutions.

3 Because sports seems to dominate the activities of the Ministry of Youth and Sports, the activities of youth and training should be separated from sports to form the Ministry of Youth and Training.

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Table 1

Control	Type: Employer/Job linked	Type: Specialised non-school	Type: School-based
MOE		LSVT**	
MYS	MVTC* LOJT* BDOT* LOIC** YATC*	NYTC**	
MCSS WVST**			
LIPA		ESCS* NCTI*	
Other GOL	PWRM*	TNIM*	BWI*
Other Govt's		MRUC** MRUF** MRUM** WAII** MRUT**	
Mission		ABTI** MC** ZA SMAT**	JRR**
Proprietary	BVTC FI	CBS IPS NSAT CCPM** LCI** OCC CCTC** LSES** RISS CPCA MCTC** SMCI CWA** MSAT VETC GLCI MSTS IMA MASE NAVI	

Source: Education and Human Resources Sector Assessment 1988;MYS.

Notes: * full government financing
** partial government financing

Table 2: Abbreviations of VTE Organisations used in Table 1

CODE	NAME
ABTI	Arthur Barclay Technical Institute
BDOT	Business & Domestic Occ. Training Center
BMVT	Bong Mines Vocational Training Center
CBS	College of Business Studies
CCPM	City Commercial Pennoh Memorial Institute
CCTC	City Commercial Training Center
CPCA	Church of Pentecost Commercial Institute
CWA	College of West Africa
ESCS	Eugenia Simpson-Cooper School
FI	Firestone Institute
GLCI	Gar Lour Commercial Institute
HEC	Home Economics Center
IMA	Institute of Management and Accountancy
IPS	Institute of Professional Studies
LCI	Lincoln Commercial Institute
LECT	Liberia Electricity Corporation Training Center
LOIC	Liberia Opportunity Industrial Center
LSES	Leigh Sherman Executive Secretarial Institute
LSVT	Liberian-Swedish Vocational Training Center
MASE	MASE Commercial Institute
MC	Monrovia College
MCTC	Modern Commercial Training Center
MRUC	Mano River Union Customs, Excise, Trades
MRUF	Mano River Union Forestry Training Institute
MRUM	Mano River Union Marine Training Institute
MRUT	Mano River Union Telecom. & Postal Institute
MSAT	Monrovia School of Appl. Tech.
MSTS	Morning Star Typing School
MVTC	Monrovia Vocational Training Center
NAVI	National Academic & Vocational Institute
NCTI	National Clerical Training Institute
NSAT	Nanlinda School of Appl. Tech.
NYTC	National Youth Training Center
OCC	Opportunity Commercial Center
PWRM	Public Works Road Maintenance Center
RISS	Royal Institute of Secretaries Center
SMAT	St. Mary's Agricultural Training Center
SMCT	St. Martin's Commercial Institute
TNIM	Tubman National Institute of Medical Arts

VETC	Vahun Ecological Training Center
WACS	West Africa Computer Science Institute
WAII	West African Insurance Institute
YATC	Youth Agricultural Training Center
YOJT	Youth OJT Training Center
ZA	Zion Academy

Source: Education and Human Resources Sector Assessment 1988, MYS

Table 3: Vocational/Technical Enrolments and Graduates

	1979		1980		1981		1982		1985
	Enrol	Grad	Enrol	Grad	Enrol	Grad	Enrol	Grad	Enrol (Proj)
Commercial trades									
Accounting	570	181	563	166	834	220	692	182	358
Bookkeeping	224	56	126	21	485	120	522	84	99
Clerk/Typist	637	149	703	152	624	237	754	102	0
Secretarial science	469	85	499	202	680	242	502	113	275
Business education	208	59	290	76	212	43	161	37	63
TOTAL	2108	530	2181	617	2835	862	2631	518	795
Agriculture									
Agricultural technician	83		185		150		85		
General agriculture	570		579		509		468		
TOTAL	635	111	764	147	659	421	553	150	162
Engineering and building trades	994	n/a	1209	n/a	1456	n/a	1532	n/a	443
Home arts	1008	409	1122	522	1349	529	577	41	81
Industrial arts	n/a	n/a	920	42	1020	862	1414	74	165
TOTALS	4763	1305	6196	1881	7317	3536	6707	1289	1646

Table 4: Distribution of Funds to Controlling Agencies of Vocational/ Technical Training Institutions

FY 1987

Controlling Agencies	Expenditures (Liberian dollars)
AITB	65,943
MOE	330,557
MYS	174,929
LIPA	36,854
TOTAL:	608,283

Notes: AITB - Agricultural and Industrial Training Bureau
MOE - Ministry of Education (Bureau of Professional and Technical Education)
MYS - Ministry of Youth and Sports (Bureau of Vocational and Technical Training)
LIPA - Liberian Institute of Public Administration

7 Reforming vocational learning? Contradictions of competence

Nancy S. Jackson

> Although there was a consensus that something urgent needed to be done, there is less agreement about whether the government proposals will actually solve any of the problems (Hyland 1992, p.29).

The story of competency-based education and training (CBE/T) poses a dilemma which is all too familiar to critics of educational policy. That is, there exists nearly two decades of scholarship, including theoretical critique and empirical research originating in philosophy, psychology, linguistics, education and sociology, which argues in various ways that the competency paradigm has not and probably will not 'improve learning' in most of the educational contexts where it has been applied.[1] To borrow words from Henry Giroux, it appears to 'begin with the wrong problems, . . . misrepresent the problems it endorses and . . . advocate the wrong solutions' (1984, p.188).[2] Recent British critics have called it a 'theoretically and methodologically vacuous strategy' for upgrading the vocational education and training system (Hyland 1992, p.35) and one that a 'careful educator would be well advised to avoid' (Ashworth and Saxon 1990, p.18). Yet the paradigm persists, indeed proliferates on several continents, as new generations of the competency model are introduced, all claiming to benefit from the 'mistakes of the past' (Collins 1987; Gamson 1979), all claiming to be the new panacea in education and training reform.

This paper explores some of the paradoxes and contradictions of the competency movement in North America and Great Britain. I will review the major criticisms that have led educators to condemn the approach variously as 'irrational', 'dysfunctional' or even 'the brainchild of somebody with a small brain'. But my primary concern is to understand why many cogent critiques have not been very successful in dampening enthusiasm for CBE/T as a framework for education and training provision. For this we

need to understand not where and how it has failed, but rather why and for whom competency measures nevertheless appear as an intelligent and rational choice. Only then can we account for its remarkable persistence or devise a sensible strategy to oppose the growing hegemony of the competency movement across the industrialised world.

I will argue that to debate the merits of the competency approach on the basis of its impact on teaching and learning is to substantially underestimate its scope and significance and to misread the basis for its force and persistence. Alternatively, if we focus our investigation on how it works as a tool of administrative reorganisation, all of these things can be better understood. The analysis can be summarised as follows. The use of competency measures to determine educational objectives and organise programme delivery involves a fundamental transformation in the interests and methods of knowing that drive educational decision-making. In particular, the standpoint of the curriculum undergoes a radical shift from a focus on the learning process to the problem of satisfying the imperatives of a managerial process which ties educational institutions to a larger policy process. In the present policy context, concern for individual achievement through education and training opportunities is subordinated through competency measures to the interests of the state in creating an educational and training infrastructure which can be said to be responsive to the needs of employers. Toward this end, instructors are removed as the primary authority over curriculum, and this role is formally reassigned to employers, but harnessed to a highly rationalised framework for decision-making that emphasises short-term skill requirements in the workplace. These arrangements make the curriculum process itself increasingly unresponsive to 'needs' as conceptualised from an individual or educational perspective, or from the standpoint of an employer interested in medium- or long-term human resource development. However, competency-based systems have become the hallmark of good management practice in educational institutions themselves, and a centrepiece of political promises about education that is 'efficient', 'effective' and 'responsive' to the needs of the economy. Whether they succeed in making individuals more 'competent to act' in the workplace remains a question nobody asks.

This paper explores these competency arrangements primarily with the non-compulsory vocational education and training sector in mind, although it draws on debates about its use and effects in other sectors as well. The first section of the paper focuses on the charges of behaviourism, reductionism and scientism to which competency measures have been widely subjected in North America and Great Britain. The second part explores how behaviourism is central to transforming local institutional relations to fit into a larger picture of managerial accountability and public policy. In both sections I will draw partly on my own research experience within career/technical programmes of the two-year college system in Canada.

The conclusion argues that while CBE/T may be a 'faithful tool' for administrators and politicians, it is not doing a good job for anyone else. It fails to serve the interests of employers in having a training system that is flexible and responsive. It will likely fail to serve the needs of individuals for skill recognition and development because it doesn't address the political aspects of skills formation. At best it gives us administrators who can tell where the money is going, but in doing so it produces education and training institutions in which learning has been displaced by managing as the driving force of curricular organisation. In other words, at the end of the day, it gives us something that is 'not worth having' (Grosch 1987, p.161).

Behaviourism, reductionism, scientism

In North America, there is nearly a century of experience with efforts at 'scientific' curriculum-making in general, and at least two decades of experience with various innovations identified as 'competency-based'. The upshot of all this activity is a fury of controversy and contradictions. Use of the terms competence and competency-based is widely recognised to be rife with ambiguities, inconsistencies and contradictions.[3] Such measures are accused of failing to achieve their intended results, and of being the cause of 'profound, unanticipated, and unexamined changes in the conception and operation of education' (Wise 1979, p.ix). These charges arise with remarkable similarity across the compulsory and post-compulsory sectors, from institutions offering general or liberal studies as well as vocational education and training, and from both administrative and pedagogical perspectives.

From an administrative vantage point, critics of the competency approach in the public schools sector in the US have long argued not only that the approach 'fails to do justice to the complexity of the educational enterprise' (Smith 1975,p.1), but also that it is outrightly 'dysfunctional' (Guthrie 1976) even 'dangerous' (Holt 1987; Ruth 1972). One of the bases for these claims was a painstakingly detailed analysis of a large-scale, federally funded, competency-based programme of education for disadvantaged children which concluded that, after seven years and more than $52 million, the approach had 'failed to meet the expectations of reformers or even to serve the self interest of federal program managers' (McLaughlin 1975, p.viii). The same framework, however, was used to shape educational legislation in over 30 states, marking the beginning of what came to be called the competency 'bandwagon' (Spady 1977).

In the post-compulsory sector in both Canada and the US, critics charge that initiating and maintaining a competency system puts a heavy burden on instructors, creating additional faculty duties which are largely unanalysed and unrewarded by the administration (CIEA 1988; Gamson 1979).

Instructors lacking experience with the principles and mechanics of the competency format complain of 'unspeakable jargon' and arduous, time-consuming curriculum preparations which leave them 'ragged and exhausted' (Gamson 1979; Grant *et al.* 1979). Programmes are said to require a degree of cooperation and coordination among individuals and institutions that is not readily forthcoming, making the systems sluggish and burdensome. An enormous volume of paperwork is generated, putting a strain on support services. All these problems in implementation have been blamed in the past for mass resignations of faculty, a high attrition rate among students, and a high programme mortality rate (see Grant *et al* 1979).

The systematic character of institutional arrangements under the competency paradigm is summarised by the critics as 'scientism' and 'hyper-rationalization': 'the misapplication of legal, scientific and managerial rationality . . . a pernicious concern for quasi-legal procedure, arbitrary rules, measurable outcomes, and pseudoscientific processes' (Wise 1979, p.192). Where such rationalised rules and regulations have been introduced, they report that 'no provable case can thus far be made that higher education is in any way better . . .' (Wise 1979, p.191). On the contrary, governance processes are reported to be increasingly misguided. Institutions are caught in a reductionist circle of 'goal displacement' in which they can afford to promise only what can be pursued without risk of failure. They set as goals only what can be clearly agreed upon and define as objectives only what can be specified in measurable terms. Thus, '. . . abstract and salutary goals are reduced and trivialized and only those goals which can be measured are implemented' (Wise 1979, p.58). Ironically, under this system, the more programmes seek 'high quality evidence' as a basis for their own justification, the more their goals become narrowed and simplified (Spady and Mitchell 1977). According to the critics, the problem is that the governance of these institutions is premised on a 'non-existent educational science' (Guthrie, 1976, p.274).

From a more pedagogical perspective, the controversy over competency measures has traditionally centred on behaviourism. Behavioural objectives and methods of assessment are seen by proponents and critics alike as the centrepiece of the competency paradigm. There is, however, considerable difference of understanding about just how and why behaviourism is the pivot point of the whole approach. Although neither a full exposition nor critique of behaviourism is within the scope of this paper,[4] I will stress a few key points.

The importance conventionally attached to behavioural specifications by vocational educators is their promise to provide a clear statement of what is to be mastered. The emphasis is on 'performance' characteristics that are observable and measurable according to criteria that are clearly specified in advance. In this way behavioural specifications are thought to provide a

rational, instrumental link between the 'needs' of the employer and the learning activities of individuals. But there are several problems commonly identified with this 'link'.

The first is that the universe of action defined according to behaviourist principles is said to be overly narrow and reductionist. 'Behaviours' so conceived are said to fail to account for either 'intention and meaning' or 'motivational aspects of purposeful action' (Collins 1991, 1987; 1983, p.177). Specifically in the context of vocational learning, critics charge that undue emphasis on behavioural objectives leads to a 'prefabricated . . . notion of knowledge' and to emphasis on the learning of 'routine, unimportant, even trivial material' (Cantor and Roberts 1986, 1979, pp.63-79). As such, they are said to inhibit the learning process and block 'the development of elaborated knowledge or the formation of a coherent political consciousness' (Moore 1983, p.30).

Secondly, in the translation of objectives into instructional design and assessment, a behavioural focus is said to eliminate the flexibility associated with exploratory and innovative aspects of both teaching and learning. Thus behaviourism is seen to impose an impoverished version of instructional interaction (Short 1984; Nunan 1983).

Thirdly, although the prescribed behaviours are treated by proponents as 'intrinsically unproblematical' (Moore 1987, p.239), or 'given' by the nature of tasks (Short 1984), critics argue that this simple equation is more apparent than real. Even in industrial settings where tasks are commonly thought to be relatively simple to identify, thoughtful observers point out that the problem of ambiguity of objectives remains 'irremediable' (Macdonald-Ross 1975), despite official rhetoric to the contrary.

This last criticism in particular draws attention to several points I want to pursue in this paper. That is, the specificity and certainty which is promised by the behavioural approach is revealed upon closer inspection to be an appearance, an elaborate and powerful social construction. Even when scrupulously implemented, behavioural objectives can never be achieved in practice with the precision they offer in theory. Instead, they have an ideal, even 'fictional' quality, always just out of reach (Short 1984; Nunan 1983; MacDonald-Ross 1972). Participants at all levels know that what goes on in classrooms is not always done 'by the book', and that this is more than a problem of 'stages of implementation' (Hart 1987; Nunan 1983).

In consideration of this disparity, a few critics are coming to recognise that the behavioural approach does not result in a simple top-down imposition of a new form of classroom learning and that, accordingly, the power and popularity of the approach does not depend on this achievement. Paradoxically, in fact, this failure turns out to be relatively unimportant

(Nunan 1983), or at least not important enough to undermine faith in the whole approach. The result of this apparent contradiction is that we are left looking elsewhere for clues to why behaviourism is seen as foundational to the competency edifice (Moore 1987; Gleeson 1986; Finn 1982).

A second and more fruitful approach to understanding the significance of behavioural prescriptions is to explore their contribution to what Moore (1987) calls the 'institutional arrangements' that govern instructional activity. Examined in this light, the tenets of behaviourism have a much broader significance, as part of the necessary 'micro-structure' (Nunan 1983) for a rational/systematic approach to the delivery of education and training. That is, they produce an objectified form of knowing and acting—specifically of teaching and learning—which can be externally defined and controlled. Thus they transform the social relations of instruction. I will try to identify this dynamic concretely in two dimensions of activity, drawing on examples from my own research in career/technical programmes in the Canadian college system.

The first dimension of objectification occurs in the way vocational knowledge itself is constituted. 'Competence' as defined through the filter of behaviourism is a form of action governed by external 'requirements' and criteria of 'adequacy', to serve purposes not defined by the actor. It is a form of human action in which the knowing/acting subject has been 'removed', or at least obscured from view in the name of objectivity. This objectified form of human activity is installed at the centre of competency-based methods by reliance on the notion of 'performance' as both the goal and the outcome of instruction and the medium through which mastery is determined and certification granted.

The problem with these arrangements can be seen in the work of a task analysis workshop I attended in a Canadian community college setting, where employers were producing a skills profile for an office administration programme. Much of the discussion focused on the problem of establishing skill ceilings for various kinds of entry-level work. For example, they were asked to decide 'how much' and 'what kind' of computer literacy was 'really required' for an entry-level office worker. One employer gave the example of working with a spreadsheet package. He argued: 'How quickly you finish the spreadsheet doesn't depend upon how quickly you type. It depends on your approach, your knowledge of the package, and how you use it'. He wanted to establish 'understanding software packages' as an entry-level skill requirement for office workers. Under the leadership of a curriculum consultant trained in behavioural procedures, the group settled on 'demonstrates speed and accuracy in keyboarding' as the appropriate performance objective for an entry-level worker. The employer went away disillusioned. Here is an illustration of defining job performance in a objectifying manner that satisfies the criteria for performance standards, but

that defies the underlying logic of human activity. The more abstract 'need' of 'understanding software' at a standard appropriate to an entry-level worker was suppressed in favour of a more concrete one that could be accurately measured in the classroom or on the job. In this process, the actions of the worker are objectified to fit the needs of the instructional paradigm.

This same objectified relation is produced in a second dimension of instructional arrangements, that is the relation of instructors to curriculum design and delivery. Implementation of competency-based measures most often begins, as in the example above, with the use of a task analysis or functional analysis process to establish a new and external definition of 'need' against which every aspect of curriculum content will have to be justified anew. When this is undertaken in a competency-based framework (see Adams 1979; Sinnett 1975), it provides a highly structured framework through which the knowledge of job requirements provided by employers (or sometimes job incumbents) is translated into specific performance objectives for learners, for example, the ability 'to write a business memo or report'. Once these 'skill profiles' are developed, adequacy of instruction can be justified only in relation to these end goals, and not in terms of the mastery of basic educational building blocks such as grammar, punctuation, and composition, or in terms of broad education ideals like 'understanding the business environment'. Thus it forces a shift in the reference point for the work of instructors from their discipline as educators (e.g. math, English, business) to the workplace, as the place where appropriateness and adequacy of learning is determined. It also achieves a fundamental reorganisation of the social relations of instruction. Under the new arrangements, teachers are no longer free to determine either the ends or the means of the instructional process. Their role is instead a 'support function', as a facilitator subordinated to institutional goals and objectives which are determined by others and implemented through measures intended to organise their practice.

The significance of this reordering of institutional relations is not only about a loss of authority for teachers, though indeed it has been widely criticised for that effect (Walker and Barton 1987; Connell 1985; Apple 1982, 1980). It also accomplishes a broader shift in the domain of 'needs' and interests to which educational practice is responsive. Traditional concepts of long-term skill development or educational achievement are subordinated to short-term objectives of job performance. Long-term public policy commitments to investment in 'human capital' are subordinated to 'flexible' programmes that address short-term skills requirements. In this process, the instructional process comes to be governed by the logic of corporate balance sheets and political promises, and learning becomes 'the province of corporate, non-educational interests' (Moore 1987, p.236).

Thus I want to argue that behaviourism is about a great deal more than making goals 'explicit' or assessment 'objective'. It is about producing the relations of instruction in an objectified form by which they can be made—and made to appear—'responsive' to the dictates of others. As an instrument of reform, this mechanism is not primarily concerned, in the first instance, with the activities of the learner, all the rhetoric to this effect notwithstanding. It is aimed instead at a host of other actors in education and training institutions whose daily decisions can thus be rendered more accountable.

Good management practice

Making educators accountable is an increasingly attractive proposition to administrators and politicians alike in the present political and fiscal climate. For this purpose, CBE/T is a seductive tool, despite its recognised tendency to be 'narrow' and 'reductive' and to generate considerable local opposition (Maclure 1991; Grant *et al.* 1979). As one government official said to me, it offers 'all the administrative jelly beans you could desire'.

Among the 'administrative jelly beans' available through CBE/T is the capacity to deal with what college administrators call 'curriculum creep'. They argue that hiding behind the principle of 'academic freedom', instructors tend to teach whatever they have a 'passion' for. Thus the curriculum gets loaded down with a lot of 'baggage' that doesn't suit 'any bloody purpose', and curriculum content gets decided on the basis of 'job security'. One administrator described this as a problem of having 'wolves in charge of the chicken coop'. By contrast, competency measures give these administrators 'a totally objective statement of needs' against which all aspects of the curriculum have to be justified anew. It provides them with systematic information to support routine aspects of programme monitoring and budgeting, and when non-routine changes are required, it gives them the means to make and to justify difficult and unpopular decisions. Rather than 'shooting in the dark' or 'leaving things to chance', competency measures are a means of making decisions that will be seen to be 'objective' and organisationally warranted. Decisions taken in this manner are evidence that you are 'doing a credible job' as an administrator. It has become the standard of 'good management practice'.

Leaving things to 'chance' is more of a problem in some areas of instruction than others. For instance, in some fields, instruction is tied to regulatory processes of the state, such as the licensing of practitioners in social and health care fields, where, as one government official put it, 'there is a real or an apparent health or human safety problem'. Such cases are said by these officials to call for 'competency-based training in its purest form' where the object is to ensure that graduates have 'standard set of skills' so

'we can feel comfortable when they ask about your licence'. Such standards are said to ensure that a person who has been trained and assessed is 'capable of taking specific actions in a safe and effective fashion'.

Here again, competency-based curriculum is seen as an especially important resource when trouble arises. As the same government officials explained to me, the competency approach is an essential safety net should 'the people in our training institutions get hauled into court' in a malpractice suit of the kind that is now occurring in educational settings in the US. In such situations, competency measures have the institution 'covered'. They allow lawyers and administrators to check the curriculum, determine what was taught and when, and to establish that the performance of a student was assessed and certified on a certain date on the activity in question.

This point demonstrates an important aspect of the competency paradigm as a set of institutional arrangements. That is, in practice it tells more about the adequacy of an organisational course of action—i.e. instruction and assessment—than it does about the performance ability of individual students. So, in the case of the malpractice suit, the legal responsibility of the college or the ministry stops at establishing that the procedures for safe and legal practice were accountably taught, and that the performance of the individual was demonstrated to be adequate in that context. Demonstrating 'competence' is a matter of making teaching and testing accountable to a standard through a warrantable set of procedures. Technically, it is not the competence of the individual but the competence of the instruction and the liability of the institution which can be assured by these means.

In this context, administrators report that competency measures allow them access to many things they need to know, to the degree they want to know them. It makes selected aspects of the curriculum process reportable/accountable, creating a form of documentary vision, through which they 'can see' and 'know'. They can 'see' that the proper steps have been followed, that the employer group has been consulted so that the programme's goals have been 'validated by the field', that the required items have been taught and assessed, and so on. This form of seeing and knowing comes to stand in for reality for all practical, administrative purposes.

In such a textually mediated (Smith 1984) universe of action, the 'actuality' for organisational purposes comes to be one step removed from the ground of experience and action of individuals. What counts is not what individuals do *per se*, but what individuals can be shown to have done. This epistemological disjuncture in the constitution of the 'actual' is an essential ingredient in what Macdonald-Ross (1975) lamented as the 'weak' form of systematic procedures.[5] It is the same moment identified even by early proponents of scientific management who describe it as 'a method

characterized by its spirit quite as much by its accuracy' (Spaulding 1913, p.260). What counts as 'actual' is a socially constructed abstraction, omitting many aspects of the social process which it claims to represent. This form of organisation allows for a certain amount of slippage or absence of precision in its renderings of the social reality, where some questions are neither asked nor answered. Administrators call it an 'arm's length relationship'. It means, for example, that they know the programmes they administer do not follow the curriculum to the letter, but this is information they 'don't necessarily want to know' so they 'don't ask'.

These observations warrant close attention if we are to finally grasp the scope and significance of competency-based curriculum measures and their popularity with policy makers. That is, their practical utility may not lie in their power to make individuals more competent to act in the workplace, despite all the rhetoric to the contrary. Nor do they need to control exactly what goes on in courses. Rather, what they achieve is a transformation in the way existing responsibilities of education and training institutions are discharged, and reported as discharged and, significantly, whose interests are inscribed in these procedures. What is imposed is strictly a method of making curriculum decisions and making them reportable as 'responsive to the needs of industry'. Adherence to these required methods and procedures organises the relevances of action and decision-making of individuals at every level of the process. Thus even decentralised, local decisions are articulated, through a bureaucratic and political framework of accountability, to the interests of those who are neither teachers nor learners, but rather sit in the offices of government and industry, where the goal is to secure 'a better return on educational investment' (Gamson 1979).

Panacea or Pandora's box?

To summarise briefly, I have tried to show that competency-based curriculum is significant in today's policy climate not because it will 'improve learning' but because it provides an infrastructure for determining how and by whom educational goals and standards will be set. By adherence to behavioural principles, it constructs an objectified and objectifying organisation of social relations through which successive moments in the educational enterprise can be defined, measured and evaluated in the interests of employers, administrators, and policy makers. It is for this reason that competency measures, even when only loosely or 'weakly' practised, are the constant companion and faithful tool of the new wave of social reformers.

In the face of this elaborate infrastructure of reform, a host of unanswered questions remain. Perhaps one of the most interesting is whether there is any reason to think that CBE/T will, in practice, be any better at serving the

'needs of industry' or the interests of employers than previous systems of public provision. Or, in the end, are benefits to employers of CBE/T more apparent than real? From the perspective of employers, the evidence so far is not encouraging.

First of all, the notion that competency measures will make public institutions 'flexible' and 'efficient' flies in the face of experience to date on any continent. On the contrary, evidence is overwhelming that institutional processes become more bureaucratised, more cumbersome, more time-consuming, more costly, more frustrating and put 'more power in the hands of those who are the further removed and know the least' about education and training (quoted in Wise 1979, p.191). Persistence in the face of this track record is surely a 'triumph of faith over experience' (Holt 1987).

Secondly, the idea that employer input leads to a 'totally objective statement of needs' as the basis for programme planning is becoming visible as an elaborately staged myth. Detailed examination of the procedures for task and functional analysis used with employer groups or lead bodies reveal a myriad of problems (Field 1992; Debling 1989; Jackson 1988). Employer input on goals and objectives of instruction is highly mediated by the principles of behaviourism. This commonly results in a very narrow and short-term range of 'needs' being eligible for consideration (see Adams 1975; Sinnett 1975) and a lot of frustration on the part of some employer-participants. Some proponents now argue that the use of 'functional' rather than 'task' analysis at this stage goes some way to repair the excesses of reductionism (e.g. Mansfield 1989). This may indeed be true, but such a change addresses only a narrow range of the concerns outlined here. In addition, problems of representativeness within employer groups or lead bodies are persistent. Since different sizes and types of firms have a very different organisation of skill requirements, this leads to legitimate concerns about the lack of generalisability and/or the abstractness of performance standards in skill profiles developed by lead bodies as the basis for curriculum design (Debling 1991; Wolfe 1989; Jackson 1988). All of these are problems in the much touted 'responsiveness' of CBE/T to the requirements of the workplace. They contribute to a lingering need to 'foster a sense of ownership' (Debling 1989) of the process among employers. These troubles suggest that to describe the competency system as 'employer-led' may be at best a 'half truth' (Field 1992).

In fact, upon closer examination it is very clear who is actually 'leading' CBT/E initiatives in the US, Canada, Great Britain and Australia. All are actively driven by governments, or as John Field (1992, p.7) put it so nicely, 'selective coalitions between (parts of) capital and (parts of) the state'. Governments are pushing CBE/T precisely because it provides them with the means to present an appearance of serving the needs of industry at a time when their political survival depends on doing so. Furthermore, it

claims to do so in a way that is 'market-led' and 'decentralized' (Wurzburg 1989), conforming to the neo-conservative agenda of our time. Meanwhile, as a day-to-day matter, the practical utility of the approach to these same state bodies is their power to put in place the infrastructure for a highly regulated *form* of provision (Field 1992). This is illustrated quite clearly, for example, in the way the British government is starting to use the National Vocational Qualfication framework to determine which courses colleges and schools are permitted to offer to students pursuing vocational options (Hyland 1992).

In the face of all these contradictions, the lingering commonsense question—and certainly the one that should be the focus of popular politics—is the question of whether competency-based vocational learning is likely to make individuals any more 'competent to act' and consequently whether working people should put their faith in it as an approach to skills development.

The least satisfying, but perhaps most telling, response to this question is that governments don't 'want to know' the answer; it is on the list of things they routinely 'don't ask'. More surprisingly, apparently, neither does anyone else. On all continents until the last couple of years, CBE/T has blossomed with relatively little research involvement, even discussion and debate, within the larger education and training communities, a fact often reported with surprise (see Jessup's foreword in Burke 1989; also Hyland 1992). So a solid, well researched answer to this question may be out of reach. But that should not rob us of the wisdom of past experience and good political common sense in deciding what CBE/T should be trusted to deliver, and for whom. While these issues are really beyond the scope of the present paper, I will close by pointing in the direction that they might carry us.

New state-led competency-based educational and training systems are being sold to working people in both Australia and Britain (with Canada not far behind) as a highly accessible and democratic form of provision through which they will be able to gain recognition for the skills they already have and access to an orderly system of opportunities for further skill development. Yet everything in the past history of working people indicates otherwise.

First, experience suggests that individuals will not gain significant recognition for skills which have been ignored because the failure to acknowledge skills is a political problem, not a simple deficiency in powers of observation or methods of instruction and measurement (Jackson 1991a; Acker 1989, Cockburn 1985).

Secondly, the forms of 'skill' to which many individuals will gain access in the new CBE/T programmes have been largely stripped of the basis of past

power and privilege, as in the fragmentation of apprenticeships into partially-trained or cross-trained workers, in order to harness them more tightly to management goals in the workplace (Jackson 1992, 1991b). These are large and complex issues to address in their own right. But I mention them here to remind us that CBE/T is a technicist solution to a problem that is profoundly political, and as such, it is not likely to serve the long-term interests of working men and women.

Endnotes

1 See for example Ashworth and Saxton (1990), Collins (1987), Short (1984), Grant *et al.* (1979), Wise (1979), Hall and Jones (1976), Smith (1975), MacDonald-Ross (1975, 1972), Travers (1973), Ruth (1972).

2 This cryptic comment by Henry Giroux (1984) was originally aimed more broadly at what he called the 'new public philosophy' of education in the United States.

3 By those seeking stable definitions, the following are widely quoted. The first is from the US Fund for the Improvement of Post Secondary Education (FIPSE): 'Competence is the state or quality of being capable of adequate performance. Individuals are described as competent if they can meet or surpass the prevailing standard of adequacy for a particular activity' (quoted in Wise, 1979, p.197). The second is from William Spady, a leading proponent of the competency approach: '[CBE is] a data-based, adaptive, performance-oriented set of integrated processes that facilitate, measure, record and certify within the context of flexible time parameters the demonstration of known, explicitly stated, and agreed upon learning outcomes that reflect successful functioning in life roles' (Spady 1977, p.10).

4 For advocacy of behavioural objectives, see Popham and Baker (1970), Gagne (1967), Mager (1961), Tyler (1949). For an extensive yet accessible critique of behavioural objectives, see Macdonald-Ross (1975).

5 Macdonald-Ross (1975) posits two approaches to the behavioural/ systematic approach to education: hard and soft. The 'soft-line' approach describes those who are satisfied with 'weak rules' for deriving objectives . . . 'better than nothing but not leading to powerful prescriptions'. Macdonald-Ross argues that the 'weak rules' position is inconsistent with many of the 'ambitious and demanding schemes' derived from behavioural premises in recent years, such as 'payment by results or mastery learning' (1975,p.361). He furthermore objects that it is not clear whether 'weak' procedures can 'deliver the goods: that is, whether the outcomes of education can be brought in line with the initial aims. And

that surely was the purpose of the whole enterprise' (Macdonald-Ross 1975, p.361). What he fails to question in all of this is whose 'initial aims' are being addressed and thus what it means to 'deliver the goods'.

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8 Lessons learned in Scottish competence-based systems

Dennis Gunning

Introduction

The development of competence-based systems of qualifications has been a feature in various nations in recent years. This paper deals with the implementation of such systems in Scotland, following the publication in 1983 of the government paper which has since become known simply as 'The Action Plan'.

During the ten years since that publication, the use of competence-based qualifications has widened in Scotland and has also spread in the rest of the United Kingdom. This paper will review the background to the development of competence-based qualifications in Scotland; outline the United Kingdom context in which the development took place; describe recent findings on the implementation of these qualifications and, finally, look at recent initiatives and proposals by which the Scottish system is being further refined.

To simplify terminology, this paper uses the general term 'learners' to refer to students, trainees and pupils and 'centres' to describe schools, colleges and training organisations.

The Scottish system

Before looking in more detail at the Action Plan, it is necessary to briefly explain the Scottish system of education and training—especially to emphasise key differences between it and the system of England and Wales.

First of all, it is important to remember that the Scottish education system is covered by separate legislation in the UK Parliament and is administered by the Scottish Office Education Department in Edinburgh.

The Scottish system has historically been less elitist and more community-rooted than that of its English neighbours: the concept of 'education for all'

took hold more than 100 years earlier in Scotland than in England.

To an extent, this difference is reflected today in the secondary school system, where well over 90 per cent of Scottish pupils attend the regional secondary schools and where the qualifications system certificates everyone at age 16 via the Standard Grade. Beyond 16, the Higher Grade is the target for those aspiring to higher education and is aimed at around 30 per cent of the age cohort; the most able pupils would typically follow five or even six Highers in one year of study to age 17. Contrast this with England and Wales, where GCSE covers only 60 per cent of the age cohort at age 16 and A-level is a highly selective award requiring a very academic and specialised curriculum of two years duration.

In further and higher education, there are also important differences between Scotland and England. Two are worthy of mention here. First, a markedly higher proportion of the population in Scotland has traditionally continued education beyond school. Second, for those entering university, the Scottish honours degree is of four years duration, compared to three in England and Wales.

The last contrast between Scotland and England relates to the key agencies involved in education and training. Scotland has single national bodies; for example, the Scottish Examination Board for school qualifications and SCOTVEC for vocational awards. In a small nation of only 5 million people, this makes sense. By contrast, England has bodies which have evolved by a different route and which have resisted rationalisation. Thus there are several awarding bodies for the GCSE and for A-level; in vocational education, awarding bodies such as City and Guilds, BTEC, RSA and others continue to compete with each other.

To summarise, then, Scotland's tradition is different. The key elements are egalitarianism, agencies delivering a coherent national framework of curriculum and qualifications and strong community commitment to the benefits of education and training.

The Action Plan

Background

The UK government of the mid-1970s, led by Prime Minister Callaghan, triggered what was to become known as the 'Great Debate' on education and training; this debate arose because of doubts about the standard of education being provided in schools. Among the many reports which were commissioned at that time, one, *Young People and Work* [1], highlighted the

large number of young people entering work who had received no vocational education or training.

In 1981, *A New Training Initiative* [2] was published by the Manpower Services Division; this aimed to transform the traditional apprenticeship system and introduced the Youth Training Scheme (YTS). This initiative stressed the need for structured training to be built on agreed, accessible, progressive and assessable standards, such standards forming the basis of vocational awards.

Although there was much debate on these issues in the UK, the first major change was proposed in Scotland. Here, in the late 1970s/early 1980s, the education system was straightforward for those who progressed from school qualifications into courses leading to degree or professional qualifications. It was straightforward in a different way for those who left school with few formal qualifications and progressed straight into employment. There was also a middle group, who were aiming at craft-level employment and who would prepare for that employment at further education colleges on a full-time or part-time basis.

This last group was faced, in further education, with a confusing array of vocational awards administered by a range of bodies, some Scottish-based and some English-based. These awards were generally based on national syllabuses, were heavily knowledge-based and were assessed mostly by formal examinations. Although the various awards were well recognised for specific occupations, there was generally no credit given for part-completion and nor were the awards transferable, in whole or in part, from one occupational area to another.

The group who progressed direct from school to employment was even worse off. Here, the Youth Training Scheme was based mainly on work experience; access to nationally recognised qualifications was virtually impossible because of their length, bias towards knowledge and assessment by examination. For this group, local or ad hoc certificates, with very restricted recognition, were the norm.

It was against this unsatisfactory background that the Scottish Education Department published its Action Plan [3] in January 1983. The Action Plan was initially a consultative document—but one which met with very widespread support.

Aims and features

The Action Plan set out to provide for all vocational needs of the 16-18 age group, whether in school, college or employment. One of its important aims was to rationalise vocational education and vocational qualifications, making

both more accessible, flexible and relevant. To do this, it proposed a change to a modular curriculum and to assessment against pre-defined vocationally relevant standards. It was envisaged that all success in this modular curriculum would be recorded on a single certificate and that the whole system would be administered by a single national body.

The key features of this revolutionary new system are listed below:

- **The modules**
  The modules designed as a result of the Action Plan were given the name 'National Certificate modules'. A module is intended to be a unit of learning and the smallest separately certifiable element. Each module is written as a series of outcomes (typically four or five including both practical skills and associated knowledge); each outcome has its standard for success defined in a set of performance criteria. Relevant assessment procedures and approaches to teaching and learning are suggested but are not mandatory.

  The modules are defined, nominally, as being of 40 hours' duration but this is meant as a programme planning guide only. The intention is that a learner will complete a module as soon as he or she can demonstrate the outcomes to the required standard, whether this takes 40 hours, two minutes or two years.

  Where possible, modules are defined generically; that is, the outcomes are not related to a particular occupational context. This avoids a proliferation of modules of the 'mathematics for plumbers' type—instead, a small number of mathematics modules can be taught and assessed in a range of different contexts. The assumption underlying this intention is, of course, that the outcomes, for example in mathematics, are transferable from one context to another.

- **The programmes**
  The Action Plan's intention was that modules might be grouped into programmes for specific occupational areas such as hairdressing or motor vehicle maintenance.

  It was envisaged that centres delivering modules—such as further education colleges—would negotiate the content of modular programmes with local employers. It was also intended that the programmes would take account of national needs by ensuring the incorporation of so-called 'core skills' such as communication and numeracy in all programmes.

  To aid the construction of programmes, SCOTVEC published so-called 'typical study programmes' for particular occupational areas.

- **The delivery**
  To ensure the flexibility and tailoring of the modules, the Action Plan required a move away from the didactic teaching style which had been typical of predecessor courses. Participative, learner-centred approaches are encouraged—and single-paced, class-based management should be replaced by one in which the different pace of learners can be reflected in the modules they follow, with different learners in the same class following different modules at their own pace.

  Because of the need to ensure that the timing of completion of a module reflects the learner's needs and to ensure that the learner can then progress immediately to a new module, assessment arrangements must be more flexible. A traditional end-tested examination system can neither deliver this flexibility nor can it assess the range of outcomes contained in a typical vocational module. Hence internal assessment was adopted for the modules, with consistency of standards being maintained by various levels of quality assurance.

- **The administration**
  A new body, SCOTVEC, was set up to administer the modular system, to operate a national system of quality assurance of standards and to issue a new certificate which cumulatively lists every module successfully completed by a learner; this cumulative certification required the creation by SCOTVEC of a sophisticated and expandable computer database.

The result

It would of course have been too much to expect that such a radical change could have been introduced without any problems arising. Later in this paper, I discuss the lessons learned from the introduction of a modular outcome-based vocational education and training system. Before that, though, it is necessary to outline other issues which have influenced the implementation of the modular system.

Advanced courses

The Action Plan's intention was to revolutionise the basic levels of vocational education and training. However SCOTVEC also runs courses at a more advanced level, leading to technician-level qualifications called Higher National Certificate (HNC) and Higher National Diploma (HND); these are well respected by employers and often lead to professional body recognition. Roughly, HNC and HND awards can be thought of as equating to the first and second years respectively of a degree course.

Before 1988, these courses shared many of the characteristics of the pre-Action Plan basic courses—syllabus-driven, externally examined, inflexible in terms of individual learner needs and no credit for part-completion.

Once the introduction of the National Certificate modules had bedded down, SCOTVEC turned its attention to these advanced courses and issued a consultation paper [4] proposing that the advanced courses should also be changed to a modular system. The proposal received overwhelming support and so, in 1988, SCOTVEC embarked on a five-year programme by which all HNC and HND awards would be transformed. The basis of the new advanced awards were to be advanced modules called 'Higher National units' which shared all the characteristics of National Certificate modules except one; in each Higher National unit, the performance criteria were defined at two levels, pass and merit, allowing for differentiation of student performance in each unit.

In the new system, a HNC award is made up of a minimum of twelve credits (one 40 hour Higher National unit equals one credit) and an HND award of a minimum of 30 credits. In each case, the precise mix of units in the award is determined by SCOTVEC by a process of validation. Thus the learner is certificated for each individual Higher National unit successfully completed and, if the defined award programme is completed he or she also receives a separate 'group award' in his/her chosen subject such as, for example, Higher National Certificate in Applied Physics.

For certification, SCOTVEC decided that each Higher National unit successfully completed should be listed on the same document as the National Certificate modules in order to provide a genuinely complete, cumulative certificate. This was first introduced in 1989 and is called the 'Record of Education and Training' (RET). It lists all successfully completed modules and units, details any group awards which have been separately certificated and records any agreed recognitions attached to particular modules or group awards (such as professional body recognition).

NVQs and SVQs

While these developments, beginning with the Action Plan in 1983, had been taking place in Scotland, there had been continuing debate in England on how to address the inadequacies of the vocational education system there. Finally, the government published a White Paper *Education and Training for Young People* [5] which described the system for certification as 'complex, incomprehensible and incoherent' and called for an enquiry into, and review of, vocational qualifications.

A working group was set up, chaired by Sir Oscar de Ville, to carry out this

review of vocational qualifications in England and Wales. Its report [6] pointed to the need to reduce confusion, to bridge the 'academic-vocational divide' and to relate vocational qualifications more directly to the competences required in employment. The 'academic-vocational divide' is the description given in the UK to the traditional difference in status of these two types of award.

The working group recommended the setting up of a new body, the National Council for Vocational Qualifications (NCVQ), to develop a framework of vocational qualifications. It was not envisaged that NCVQ would award qualifications in its own right but rather that it would give its seal of approval to awarding bodies' qualifications which met its criteria.

The seal of approval is a special designation which the awarding body can apply to its qualification if it meets NCVQ's criteria. Such accredited qualifications are then designated as National Vocational Qualifications (NVQs). Since 1986, NCVQ has been developing its framework of qualifications in England and Wales and has been accrediting qualifications as NVQs.

A key criterion for accreditation as an NVQ is the requirement that a qualification is defined in terms of occupational standards and is assessed in the conditions of the workplace. To carry out the task of defining occupational standards, the government set up, in each occupational sector, so-called 'lead bodies' of which there are almost 200. Each lead body was given the task of defining the standards required for competent performance in every occupation within its sector.

These developments, although designed to tackle the rationalisation of the England and Wales system, had an impact in Scotland too, in three main ways:

1 The seal of approval of qualifications as NVQs had no equivalence in the Scottish system since NCVQ's remit did not extend to Scotland. The concept of a widely recognised seal of approval was, however, welcomed by employers, many of whom operated across all of the United Kingdom. To ensure UK-wide compatibility, therefore, SCOTVEC was asked by the government to introduce Scottish Vocational Qualifications (SVQs) as analogues to NVQs and to apply similar accreditation criteria to those applied by NCVQ.

2 The lead bodies were intended to be UK-wide in remit hence the standards which they were defining were required to be incorporated into appropriate SCOTVEC qualifications. This provided SCOTVEC with access to a new way in which to define the outcomes for its awards. Previously, SCOTVEC had consulted its own employer

networks to establish the relevance of modules and their outcomes; now, there were authoritative UK sources whose work could be tapped.

3 The development of NVQs and SVQs gave new emphasis to the skills required in employment and to assessment in the conditions of the workplace. SCOTVEC had already been managing major UK research projects on the assessment of work-based learning [7], on competency testing [8] and on accreditation of prior learning [9]. These projects had provided research backing for the assumption that flexible forms of assessment could be valid, reliable and practicable, despite the location of the assessment or the nature of the assessment evidence being 'non-traditional'.

Although SCOTVEC has modified some existing National Certificate modules to accommodate workplace conditions, modules were essentially designed with a more educational setting in mind. The module specification, for example, contained suggested teaching and learning approaches which were not designed for workplace delivery. Thus SCOTVEC created a third type of module, called a 'Workplace Assessed unit', specifically to deal with the workplace environment; these units are the building blocks of which many SVQs are now constructed.

There is still, though, an important common thread. Despite the need for another new type of unit and for new group awards such as SVQs, certification is carried out using the Record of Education and Training. Thus whatever type of SCOTVEC provision is undertaken, all success in units, modules and group awards is recorded on the same single, cumulative record.

The emerging qualifications framework

It is appropriate to briefly summarise the qualifications framework emerging in Scotland as a result of these many developments:

1 All of SCOTVEC's vocational qualifications are built of one of three types of building blocks—National Certificate modules, Higher National units or Workplace Assessed units.

2 These building blocks can be certificated individually or they can be aggregated into recognised group awards. These group awards can either be nationally recognised (such as SVQs, HNCs, HNDs) or can be tailored to the needs of a single employer or region.

3 Assessment of the modules and units is carried out against predefined standards (outcomes and performance criteria); timing and nature of assessment is not prescribed other than that it must be valid and reliable. Flexible forms of assessment such as assessment of prior learning and assessment on demand are accommodated.

4 SCOTVEC applies a national system of quality assurance to ensure that standards are maintained between centres and across time. This system operates at three levels: 'validation' of new awards; 'approval' of new centres and 'verification' of centres' assessment of their candidates.

5 The Record of Education and Training forms the single, computer-based, cumulative record of success across all provision and all awards. The RET is therefore a lifelong index to a SCOTVEC-registered learner's success in the Scottish vocational education and training system.

Lessons learned

As described previously, there has been an unprecedented period of development in Scottish vocational education and training and, in less than 10 years, the whole system has been transformed. The next sections of this paper look at the results of this change, consider the lessons learned and look to the future.

Sources

The following comments draw on much internal feedback received within SCOTVEC—but also draw on external reviews, such as:

For the National Certificate:

- the work of Her Majesty's Inspectorate in Scotland, looking at further education colleges' implementation of the National Certificate modules. The findings are summarised in *Six Years On*; [10]
- the review of National Certificate in further education colleges carried out by the Scottish Council for Research in Education, commissioned and funded by the Scottish Office Education Department; [11]
- papers published by the Centre for Educational Sociology, Edinburgh University as part of the Young Peoples' Survey. This provided information on school pupils' perceptions of National Certificate modules. [12]

For the modularised Advanced Courses:

- the formal review conducted by SCOTVEC and summarised in an

edition of its magazine *Update;* [13]

- the review carried out by the Scottish Council for Research in Education, commissioned and funded by the Scottish Office Education Department. [14]

The issues arising are described below.

Uptake—National Certificate modules

If uptake (participation) is a criterion for success, then both the introduction of modules following the Action Plan and the subsequent revision of the advanced courses have been an outstanding success.

Before the Action Plan, the old basic vocational courses attracted around 45 000 candidates per year. In the first year in which National Certificate modules were certificated, there were 50 000 candidates and they enrolled for 250 000 modules. Since then, both candidate numbers and module enrolments have climbed dramatically. In the last four years, candidate numbers have exceeded 200 000 and module enrolments have exceeded one million. This quadrupling of uptake should be seen against a backdrop of declining numbers of young people in the traditional market segment for these qualifications where, because of falling birth rates in the 1970s, the number of 16-18 year olds has decreased by around 25 per cent since 1987.

There are several reasons for this very large increase in participation:

- The modules have grown in number, from 700 in 1985 to nearer 3300 now. Modules are available in specialist vocational areas from hairdressing to fish farming and from electronics to greenkeeping. They are also available in more generic vocationally relevant areas such as communication, supervisory skills, personal and social development, numeracy and modern languages. Finally, there are also modules in leisure and hobby areas such as physical education, oil painting and music.
- The modules are on offer in a much wider range of centres than the old courses they replaced. Secondary schools have become major users, as have community and adult education centres, private training organisations—in addition to all of Scotland's further education colleges (which remain the single biggest group of users in terms of module enrolments).
- The modules attract a much wider range of candidates than did the old courses. The old courses required learners to commit themselves to a large block of study, with no credit given for part success. The modules, by contrast, allow learners to enrol for complete programmes or individual modules, depending on the learner's aspirations and circumstances. Many people first enrol for just a

single module, attracted by the opportunity for personal development with the bonus of national certification; some are topping up existing skills, others are retraining.

The place of modules in secondary schools is worthy of a brief digression. As was mentioned earlier, secondary school pupils in Scotland take the Standard Grade award at the statutory leaving age of 16. If they choose to remain at school, the next target is the Higher Grade award. Both of these are run by the Scottish Examination Board. The Higher Grade award was designed for the top 30 per cent of the age cohort and, until the 1970s, the proportion of young people opting to stay at school beyond the statutory leaving age was only a little in excess of 30 per cent. Thus the Higher Grade was a realistic target for most of those staying on at school. Since the 1970s, a range of factors caused the staying-on rate to increase dramatically, so that now the proportion of the age cohort choosing to remain at school is in excess of 60 per cent. Clearly, there are now a substantial number of young people remaining at school and for whom the Higher Grade is not a realistic target. Because of this, schools were looking for a flexible and relevant answer to a curriculum 'gap' and the solution they found was in National Certificate modules.

The uptake of these modules in schools has grown rapidly. Now, virtually every secondary school in Scotland, both public and private, is using modules. The latest statistics indicate that over 80 per cent of young people in the post-compulsory year (aged 17) enrol for modules. This level of uptake means that the modules are now not just filling the curriculum 'gap' but are also being taken by those learners following a highly academic diet of four or five Higher Grades.

The modules have been successful in providing extension or broadening work to complement Standard Grade or Higher Grade courses; they have provided 'taster' courses to enhance learners' curricular breadth; they have been used as 'bridging' courses to assist learners for whom the step from Standard Grade to Higher Grade is too difficult in one year.

The growth in uptake in schools has not been without its problems, however. Some more problematic issues are discussed in following sections.

The Action Plan had, as one of its aims, the widening of access to vocational qualifications. In this respect, therefore, the National Certificate modules have been outstandingly successful.

Uptake—new advanced courses

The data above describes the uptake of National Certificate modules. The emerging data for the more recent revision of advanced courses is beginning

to show the same pattern. The old system attracted around 10 000 new learners each year to around 500 courses. The new system, although only two-thirds implemented, is already attracting 15 000 new learners per year; total enrolments for the new Higher National units are running at almost 200 000 per year. Again, the reasons for this growth are clear:

- The new system has triggered development, in colleges, of advanced courses in new areas as diverse as media, software engineering and fashion design; new combinations of subjects have also been developed, such as awards in tourism and languages, chemistry with business studies.
- New centres have taken up advanced courses. Awards in management, for example, are now offered in the workplace by United Distillers. Another award in electronic engineering has been jointly developed by IBM and colleges and credit is given for training in the workplace.
- New progression routes have been opened up with the development of planned linkages between HNC and HND awards and degree courses. In many of the new HNC and HND awards, successful learners can carry full credit into the appropriate year (second year from HNC, third year from HND) of a degree course. This has led to much more flexible higher education provision, with appropriate exit points, with credit for successful achievement, at levels to suit the learner's needs. In addition, SCOTVEC has joined with the Scottish universities and others as members of a formal credit accumulation and transfer system (known as SCOTCAT), in which HNC and HND awards are allocated credit points for more general access to degree awards.

Progression and recognition

The Action Plan's aim to widen access to vocational qualifications has certainly been a success. A further aim was to build a coherent, progressive system of qualifications which had credit transfer built in as a key feature.

Within the National Certificate, there is progression in modules which range in demand from those for learners with special needs to those in advanced technical specialisations. There are series of modules which provide vertical progression to higher level skills (such as Text Processing 1 through to Text Processing 5); there are other series which provide horizontal progression (such as across different topics in biology). Each module contains advice (not instruction) on knowledge and skills which are needed before starting the module and on additional modules to which the successful learner can progress.

Progression from National Certificate modules to advanced courses has been

made much smoother by the development of the new modular HNC and HND awards—and, as described above, those new awards have also led to interesting examples of linkage with degree courses. Therefore the potential for progression within the system of SCOTVEC awards is now strong.

However there is another dimension to the progression issue and here, progress has been much slower. This is the need to ensure that holders of SCOTVEC awards can progress to higher education from the SCOTVEC system and also, of course, can progress to employment. Acceptance of National Certificate modules for entry to higher education developed first in the polytechnics (which have recently become Scotland's 'new universities' following the government's recent higher education White Paper [15]) and in the teacher training colleges. With the older universities, however, there was an excess of traditionally qualified applicants over the number of places available and hence admissions staff were reluctant to look at anything beyond the traditional entry qualification—the Higher Grade. Those universities which did consider the modules tended to do so in terms of a 'ready reckoner' approach by trying to define the modules which were 'equivalent' to certain Higher Grades. A constant difficulty in this approach was the pass/fail basis of the modules compared to the differentiated awards at Higher Grade.

The position has, however, begun to change—slowly but perceptibly—in two ways.

First, SCOTVEC has negotiated specific agreements with the Scottish Universities Council on Entrance, by which all universities now accept National Certificate modules as part of the general entry requirements. Second, the government funded a 'Wider Access' programme to attract adults who did not have formal entry qualifications to come into higher education. Modules, with their clearly stated outcomes, cumulative certification, individualised pace and internal assessment, have proved ideal for this clientele Learners in the access courses have to successfully complete a programme of modules, the programme having been agreed by the higher education establishments. If they do so, they are guaranteed a place in higher education. In the three years of operation of these access courses, over 3000 adults have entered higher education by this route and the first graduates emerged in 1991. For adults on access courses, National Certificate modules have become the standard non-standard route into higher education!

As far as progression to employment is concerned, progress has also been slow, in terms of gaining employer recognition of National Certificate modules. Generally, modules were accepted and adopted by those employers who had traditionally used colleges to provide off-the-job training or which had recruited employees direct from full-time college

courses. However the positive perception of employers to the modules has been slow to develop and this was illustrated clearly in market research conducted for SCOTVEC [16]. One recent way in which to improve collaboration and confidence was a project documenting good practice in industry-education partnerships [17].

The market research indicated that large companies had the greatest awareness of the new system and that recognition was strongest for advanced awards such as HNCs and HNDs. These findings will not cause surprise to anyone who has been involved in the introduction of innovation in qualifications systems. Employers generally tend to be slow to appreciate change and large employers usually lead small employers in developing such appreciation. For SCOTVEC, the data illustrated the wisdom of retaining the original names of the advanced awards (Higher National Certificate and Higher National Diploma), even though the basis of the awards has become modular. The National Certificate, by contrast, was both a new concept and a new name—and much work remains to be done to embed the concept and the name into employers' thinking.

Programme design

Again looking back to the Action Plan, it was the intention that the new National Certificate modules would be used to build programmes of study to meet the needs of individual learners and that the programmes would contain the transferable 'core skills' as well as specialist vocational skills. However, certification of the modules was carried out simply by listing all those successfully completed, not by separately certificating achievement of the programme.

This form of certification was, in hindsight, both beneficial and naive. Its strength was the equal value given to all modules on the certificate and the opportunity to give employers a complete picture of the learner's achievement. The danger was recognised that if employers were provided with groupings of modules, or ready reckoners of equivalences to other awards, they might look only at these features and ignore other, and potentially relevant, measures of success. The naivety was in expecting that employers would be willing to spend the time reading the certificates in detail.

A further difficulty with the National Certificate modules arose because of the increasing range of centres using them. In colleges, where the vast majority of learners taking the predecessor awards had been based, SCOTVEC provided typical study programmes of modules for major occupational areas. Although these were not mandatory, colleges treated them as being so, with the result that tailoring to local needs and innovation

of programme design were stifled. In schools, by contrast, there was little experience of using modular provision such as the National Certificate and, if anything, the opposite problem developed. In schools, insufficient attention was paid to ensuring the coherence of module choices made by individual learners, with the result that an unstructured curriculum was possible.

By contrast, when modularising advanced courses, SCOTVEC learned from the early experience of the National Certificate and decided to retain HNC and HND as group awards. The opposite danger arising from this decision, of over-constrained curriculum, was avoided by encouraging flexible approaches to programme planning such as the use of core plus options structures and by promoting the possibility that learners could enrol for additional Higher National units outside those required for the group HNC or HND award. Early feedback suggests that this has been a sensible approach, at least as far as employers are concerned, in that perception of the currency of the HNC and HND awards has remained very high, despite the radical change towards a modular structure.

For National Certificate, SCOTVEC is now addressing the issue of curricular structure through a number of initiatives:

1 Refined and revised modular frameworks are being developed so that relationships between modules, and progression within and beyond modules, is clear. Recently developed frameworks in the science area and in core skills are examples [18].

2 There has been a major initiative to promote curricular coherence in schools, in collaboration with the Scottish Central Council on the Curriculum (the school curriculum national advisory body in Scotland). As a result, SCOTVEC and SCCC have developed 'module clusters'—groupings of three modules, each at three levels, intended to provide a structured curricular experience with the availability of progression to more demanding levels. The initial launch of module clusters was in the areas of information technology, European studies and home economics; other areas will follow.

3 SCOTVEC was asked by the government, in the White Paper *Access and Opportunity* [19], to develop a new type of award which would be built on groupings of modules, include relevant core skills and link in to the occupational awards (Scottish Vocational Qualifications) described earlier. These new awards are intended as preparation for employment (in contrast to SVQs which are awarded for job competence) or as preparation for further/higher education and training. To emphasise the link with SVQs, these new awards have been given the name 'General Scottish Vocational Qualifications'.

General SVQs are being piloted at different levels and in different specialist areas—initially care, hospitality, travel and tourism, technology and business administration. Each award consists of a predetermined programme of National Certificate modules containing both specialist vocational modules and modules relating to the five identified core skills of communication, numeracy, problem-solving, personal and interpersonal skills and information technology. A novel feature of the pilot of general SVQs has been the incorporation of an integrative assessment at the end of the programme, using a broad-based project. This is both a requirement for the award (in addition to the programme of modules) and is also used to identify different grades of award at pass or merit. To complement the general SVQs, SCOTVEC has also developed special programmes of modules designed as possible 'gateways' into general SVQs; these awards are called 'Skillstart' and are designed for those with special training needs (Skillstart 1) and adult returners and long-term unemployed (Skillstart 2).

Despite the growing choice and sophistication of programme designs available, SCOTVEC remains committed to retaining the flexibility of the modular system by allowing learners to enrol for individual modules as well as for complete programmes. One of the most important lessons of the last eight years is that many people who would have been unwilling to commit themselves to complete programmes are willing to enrol for just one or two modules, often as 'tasters' or to pursue leisure or hobby interests. It is important that the awards system can work for such people, providing them with national recognition for their achievement and, hopefully, providing them with an experience which will make them want to come back for more.

Assessment

Another radical change arising from the Action Plan was the move away from assessment by traditional national examinations to internal assessment by the learner's teacher, lecturer or trainer. The confidence to propose such a step arose from a faith in the professionalism of the staff involved and given impetus by an examination of the emerging award system in Queensland. Brisbane became an essential destination in the late 1970s for educational reformers from Scotland.

The change did, however, go against the deeply embedded British ethos, of the value and objectivity of external examinations. Although the comparison was seldom made, the effect of the change was to bring vocational courses into line with degree courses, where internal assessment by the university or polytechnic has always been acceptable. This

acceptability is despite the fact that staff in these institutions often have little or no professional training in teaching or assessment.

The change in the nature of assessment required those involved in teaching vocational courses to take full professional responsibility for assessment and required several key steps to be followed if it were to succeed:

1 SCOTVEC had to put significant effort into developing clear and unambiguous definition of the standards required for each module through well written outcomes and performance criteria.

2 Each centre had to ensure that its staff received staff development and training in assessment and in internal quality assurance. Within internal quality assurance are the strategies required to ensure that assessment instruments are of high quality and that assessment of learners' work is made to internally consistent standards.

3 Local and regional networks had to be set up to ensure consistency of standards in neighbourhoods and to ensure that staff had the opportunity to share experiences, discuss assessments and disseminate best practice.

4 SCOTVEC had to establish criteria and procedures for the approval of centres to use modules and for the verification of assessment standards adopted within centres.

Not surprisingly, given the British love of external examinations, this was one of the more controversial aspects of the Action Plan and of the later change to modular advanced courses. Several key lessons have emerged from the various review reports referred to earlier:

- Although good intentions to deliver staff development and training existed, and to create local networks of centres, neither the national nor the local efforts met the needs of staff. (This is a general statement—there were notable exceptions in some of the Scottish regions, where excellent regional staff development took place.) This lack of resourcing and managing of a national staff development effort still manifests itself today. The review reports took the overall view that appropriate, valid and reliable assessment is taking place and staff are accurately assessing to the national standard—but that the same staff are not totally confident about the quality of their work.

- A further worrying aspect highlighted in the reports is the tendency of staff to fragment assessment so that, in effect, every single outcome in a module has its own separate assessment applied to it. The effect of this fragmentation is over-assessment and the danger of the

development of a teach-test system in which learners are faced only with short-term targets and trivialised assessment. SCOTVEC is now putting considerable effort into re-emphasising the need to take a holistic and integrated view of assessment, for example by the use of single assessment instruments which can generate evidence of achievement across several outcomes and even several modules. This had always been the intention in the modules, and has been promulgated in SCOTVEC's *Guide to Assessment* [21] and in the research report *Innovative Approaches to Assessment* [22]. Now, the message is being conveyed again with renewed vigour.

- The quality assurance measures applied by SCOTVEC to maintain national standards were designed on the assumption that they supported, and were underpinned by, local quality networks in centres and in regions. The evidence of eight years of operation shows that these local networks are not universally effective in the Scottish regions. This finding led SCOTVEC to review its whole approach to quality assurance of standards: a consultative paper was issued in 1990 [22] in which a new approach was proposed.

In essence, the new 'quality framework' approach is built on three features. First, a set of quality assurance principles was defined to form the design base for the new system. Second, a set of quality elements was developed, involving 'validation' of award design, 'approval' of centres using SCOTVEC awards and 'verification' of assessment standards in those centres. Third, a quality auditing procedure was designed as a mechanism for measuring the readiness of centres to accept devolved responsibility for operating quality elements on SCOTVEC's behalf. The aim of this new quality framework is to build partnerships between SCOTVEC and individual centres, defined in mutually agreed quality contracts which spell out each party's obligations for the maintenance of standards. This formal partnership approach is intended to avoid the past mistake of assuming that, rather than requiring that, local quality systems would underpin the national effort. As a final step in the new quality framework, SCOTVEC is opening up its own procedures to external audit by developing systems compatible with the ISO 9000 quality standard.

By these approaches and developments, SCOTVEC intends to pursue its commitment to placing the responsibility for assessment of learners in the hands of centres' staff—and to ensuring that a national quality framework is in place which supports and encourages local accountability for high quality assessment.

The Howie report

Earlier in this paper, there was a description of the growth in the use and uptake of National Certificate modules in schools, partly arising from the

increasing number of less academic young people choosing to remain at school. In 1990, in recognition of this changing pattern, and also to take account of changes in school curriculum in the middle years of secondary education, the government set up a major committee, chaired by Professor John Howie, to review the curriculum of the two senior years of Scottish secondary education.

The committee has collected views from a wide range of interested parties and has visited other European countries to look at their systems. After much debate and much public speculation, its report has now been published [23] and has stirred up intense debate in Scotland. One focus, but not the only one, of the debate has been the committee's proposal to abandon the Higher Grade as the main senior secondary school qualification, after over 100 years of use in various evolving forms.

The Howie Committee's basic premise has been that the senior secondary school curriculum has become unstructured, partly because of schools' pragmatic introduction of National Certificate modules without an associated curriculum rationale. The committee also argues strongly, and persuasively, that the current curriculum for most young people is too narrow and that they should not be allowed to opt out of important areas of study in order to follow too early specialisation.

The committee has therefore proposed a new two-strand approach, based on a two-year vocationally orientated group award called the Scottish Certificate (SCOTCERT) and an academically orientated three-year group award called the Scottish Baccalaureate (SCOTBAC). Although SCOTCERT and SCOTBAC would be specifically oriented, both would contain elements of general education, core skills, vocational experience and academic work—but with distinctive balances of each. One controversial recommendation of the committee, and one which exceeded its remit, was the suggestion that these senior secondary courses should begin one year earlier than the current practice, thus necessitating a restructuring of the early and middle years of secondary education as well. Given that these stages have just undergone earlier, extensive change, this recommendation of the Howie Committee has not been widely popular.

The government responded to its committee's recommendations by opening the report up to an extended consultation; this closed at the end of 1992. In the meantime, the debate rages on.

SCOTVEC has, of course, been very active during the years since the Howie Committee was set up—and many recent changes, such as the introduction of module clusters and general SVQs have addressed the very issues which the committee raised. SCOTVEC has now also responded to the Howie report and has generally accepted the committee's diagnosis of the

shortcomings of the senior secondary school curriculum—but with less enthusiasm for the proposed 'cure'. SCOTVEC is concerned that the proposed structure of SCOTCERT and SCOTBAC, however well intentioned, will reinforce rather than reduce the difference in status of academic and vocational awards; will require young people to make too-early choice of curriculum; and will not provide the bridges and ladders for those who make a misguided or inappropriate choice. SCOTVEC has proposed an alternative model [24] which avoids the academic/vocational separation, which can be applied without the need to restructure the earlier years' curriculum and which builds on the current work on module clusters and general SVQs.

The government now has the task of coming to a decision on how to deal with the Howie report's recommendations and with the responses to the consultation process. The decision is eagerly, and slightly nervously, awaited.

Summing up

This paper summarises the astonishing pace of development which has taken place in Scotland within the last 10 years. Every aspect of vocational education and training—its philosophy, its award structure and its approach to national standards—has been radically changed.

Generally speaking, the changes have been successful in:

- changing the approach to teaching, learning and assessment in centres
- increasing access to vocational qualifications
- providing a flexible and progressive system of awards
- developing credit transfer
- introducing new, more flexible routes to certification.

Scotland now has a coherent awards system. The building blocks are National Certificate modules, Higher National units and Workplace Assessed units and they can be assembled into a range of group awards covering:

- competence in work (the range of Scottish Vocational Qualifications, from operative to professional level);
- preparation for work or further education and training (the range including Skillstart, general Scottish Vocational Qualifications, Higher National Certificates and Higher National Diplomas).

Even without the Howie report, SCOTVEC recognises that minor adjustments to this award framework still need to be made. Nevertheless a system of vocational awards exists which can meet the needs of all members and sections of the Scottish community. Perhaps, if the level of participation

of these awards continues to grow at the rate which has been maintained over recent years, Scotland will begin to narrow the skills gap between it and its overseas rivals. To do this, it will, as a nation, need to continue to regard the international community, rather than its British partners, as the benchmark for comparison and the target for improvement.

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9 How convincing are the arguments against competency standards?

Paul Hager

Introduction

Currently in Australia a debate is occurring about the place, if any, of competency standards in the higher education system. This debate took some time to get started before being fuelled by the Finn report (1991) and the subsequent Mayer Committee discussion paper (1992) with their emphasis on key competencies and the recommendation that these should be built into all levels of the Australian education and training system. This debate has now been fuelled further by the Higher Education Council (1992) discussion papers, The Quality of Higher Education. Major contributors to this debate have been the Australian Vice-Chancellors' Committee (AVCC) which has repeatedly expressed the view that competency standards constitute a type of centralised control that is incompatible with the essential autonomy of university curricula.

The National Training Board (NTB) has been seen by many as the focus of this alleged centralised control of curricula.

The main aim of this paper is to examine the arguments proposed by various writers about competency standards, dating back to the flurry of writing on this topic in the 1970s in the USA. These arguments will be related to the current situation in Australia. However, before that, there are several general aspects of the competency debate as it has unfolded in Australia that deserve notice.

One remarkable feature of the discussions about the place, if any, of competency standards in the higher education system is that a person's political allegiances seem to be no guide to their position on competency standards. Leonie Kramer thinks that they represent the end for the humanities, whereas Lauchlan Chipman sees them injecting a welcome much-needed clarity into the way the humanities are taught and examined. Laurie Carmichael and others of the left see competency standards as the vehicle for achieving a range of desirable ends including workplace reform,

overdue adequate recognition of women's skills, etc. while others see Carmichael and company as joining the new right. In the Higher Education section of the national daily newspaper, *The Australian*, a group from one of Australia's more venerable universities has blamed Althusserian Marxism for the rise of competency standards, while a group from a different university traced it to economic rationalism and corporate managerialism. All of this suggests that the debate, in order to advance, needs to go beyond assigning labels and to take a much closer look at what competency standards have become—whatever their origins might be. After all, there is such a thing as the genetic fallacy, i.e. the fallacy of arguing that because something had certain characteristics at an earlier time, it must have those characteristics now.

It is here that we run into a second remarkable feature of the current debate, viz. the reluctance of most people in the higher education sector to take a dispassionate look at competency standards. There is no doubt a variety of reasons for this, but clearly a major one is that the influence of the vocational/general dichotomy runs deep. That is, the thinking of many people in the higher education sector is dominated by the traditional dichotomy between vocational education and 'genuine' education and all that this entails, viz. body vs. mind, hand vs. head, manual vs. mental, skills vs. knowledge, applied vs. pure, knowing how vs. knowing what, practice vs. theory, particular vs. general, and training vs. education. For those who think in terms of this series of contrasts, it is self-evident that competency standards are essentially concerned with the performance of particular and discrete vocational tasks which, however skilled they may be, involve a minimum of thought. As such, competency standards are clearly the proper concern of training, but have nothing to say to education. The apparent self-evidence of this line of thinking is presumably the reason why typical higher education opponents of competency standards show no sign of understanding what is actually in the competency standards developed so far by various professions in Australia.

That higher education opponents of competency standards in Australia do think in terms of the above dichotomies is clear from their writings, in particular in the contrasts that they draw between the higher level generic attributes, e.g. critical thinking, problem-solving, etc., that are fostered by universities, and the 'narrow' (this is the favourite epithet) outcomes that are seen as the concern of competency standards. (The contrast that results from thinking in terms of these dichotomies is shown in columns 1 and 2 of the appendix, which was compiled largely from claims made in the writings of a variety of higher education opponents of competency standards.)

Now there are several comments that I wish to make about the dominant influence in this debate of the vocational/general and related dichotomies. Firstly, there are several ironies in this situation. For a start, the theory/

practice dichotomy and all the other dichotomies that it underpins support a particular kind of educational elitism that some of the higher education opponents of competency standards have elsewhere disowned in their writings. Likewise some of the higher education opponents of competency standards are people who have at other times attacked the theory/practice division as a false and misleading way of thinking. A further irony is that several of those who have been most trenchant in their rejection of the idea that vocational education might have any place in a university preside over institutions with many faculties that are clearly vocational in intent. In medical faculties, for instance, there has been a clear trend in the last decade for assessment in the final years to centre on assessment of clinical competence.

Secondly, as I have argued in detail elsewhere, (Hager 1990), there are a number of general reasons for maintaining that the vocational/general and related dichotomies are false ones. This is not the place to repeat the details of these arguments. However, briefly, there are economic, technological and educational reasons why the vocational/general and related dichotomies are false ones. From the economist's point of view the vocational/general dichotomy is a false one, not only because graduates of supposedly general higher education courses end up in relatively well paid jobs. As well, the same result is found in all countries where schooling offers alternatives of general education or vocational education. In addition, underdeveloped countries which set out to achieve economic growth and development by deliberately making their education system specifically vocational have fared less well than those whose education system focused on basic general education. So in both cases the economist is left with the paradox that general education is more vocational than vocational education.

The technological argument is that the major impact of microelectronic technology on work has been to create a demand for the broad skills that are the product of general education. The educational argument is complex, but it is essentially Whitehead's one for the view that 'the antithesis between a technical and a liberal education is fallacious' (1950, p.74). Whitehead's basic challenge is:

> Pedants sneer at an education which is useful. But if education is not useful, what is it? (p.3)

Overall, then, there are cogent reasons of various kinds for rejecting the vocational/general dichotomy.

Thirdly, and most importantly, there are also serious epistemological reasons why the vocational/general and related dichotomies are false ones. For one thing, knowledge and competence are not as disparate as some commentators assume. Wolf (1989, p. 39) argues for the position 'that there

is no bifurcation between competence and education'. She takes this to mean that competency-based education 'is perfectly compatible with the learning of higher-level skills, the acquisition of generalizable knowledge (and understanding), and with broad-based courses.' Wolf's reasons for supporting this position include:

- 'Competence is a construct, and not something that we can observe directly' (p. 40), but so too is knowledge.
- What we know of the structure of mind shows the importance of a variety of cognitive abilities. Knowledge recall is only the start.
- Not just that something is done, but why it is done is crucial, i.e. 'knowing' something involves knowing when to access it, and being able to do so when appropriate—even if it is only in an examination room (Wolf 1989, p.40,42).

As well, there are other aspects of the epistemological argument against the vocational/general dichotomy. For instance, the vice-chancellor of the University of Leeds (Wilson 1992) has argued that by shunning the vocational, universities risk inhibiting the growth of knowledge. His argument, briefly, is that knowledge is a social product and so are the ways that we package it. He discusses various sorts of boxes in which it might be packaged. He suggests an initial four-fold division:

- Enabling disciplines (philosophy, mathematics, computing, etc.);
- Disciplines concerned with the natural world (physics, chemistry, biology, etc);
- Disciplines concerned with the human world (the arts, the social sciences);
- Disciplines concerned with practice in the human world (engineering, medicine, law, education, etc.).

Wilson argues that all categories of the disciplines make valuable contributions to knowledge advance. Increasingly, he suggests, significant advances require inter- and multi-disciplinary input. He further suggests that disciplines concerned with practice in the human world offer unique skills, e.g. design, diagnosis, pattern recognition, etc. and should not be neglected in favour of the first three categories. Eraut (1985) is another to claim that significant knowledge exists within professions that is typically not recognised by academics.

So far, then, I have suggested some reasons why the debate in Australia about competency standards and their relation to higher education has taken the course that it has. In particular, I have suggested that the debate has been clouded by dubious assumptions about the nature of vocational education. I will now move on to take a closer look at arguments about the nature of competence.

Arguments about the nature of competence

As noted already, higher education opponents of competency standards in Australia have virtually all agreed that narrow conceptions of competence are undesirable. In this view, competency standards are synonymous with lists of particular, discrete vocational tasks. Not surprisingly, the philosophers of education have been trenchant in their rejection of such conceptions of competence. A focus of their criticisms was competency-based or performance-based teacher education (CBTE or PBTE) which had a brief flowering in the 1970s, particularly in the USA. (See Houston 1974 for a comprehensive discussion). CBTE represented the attempt to apply theories of behaviourist psychology to the analysis of teaching. It was based on a very narrow conception of competence and was intended to dramatically revamp teacher education courses. According to Broudy, the CBTE approach defines:

> . . . competence in terms of prespecified performances stated as segments of overt behaviour; it argues that practicing the performance directly is more efficient than achieving it indirectly through the conventional courses . . . competence training . . . contrasts an overt performance with the conventional program's promise of performance (Broudy 1984, p.3)

Broudy and others (e.g. Kaminsky 1975 and Johnson 1975) had no difficulty in demolishing the theoretical foundations of this narrow approach to competence. Although their writings were focused on CBTE/PBTE, their criticisms are sufficiently general to apply to the conceptualisation of any occupation in these terms. Some ramifications of this approach to competence are outlined in the first column of the appendix.

Academic critics of competency standards rightly reject such an approach, preferring instead to focus attention on generic attributes as the best indicators of future successful performance. Some ramifications of this second approach to competence are outlined in the middle column of the appendix. The difficulty with this second approach is that the link between a generic attribute such as analysis, and actual professional performance is doubly vague. Firstly because the claim that graduates develop a capacity for analysis is typically not subjected to detailed scrutiny (see, for example, Chipman 1992), and secondly because what analysis typically means in the day-to-day practice of the profession is not considered. The integrated approach which I will be recommending addresses both of these issues.

However, the above alternatives are not the only way of conceptualising competence, although this does not appear to be a welcome message in many quarters. The same people who want to reject all narrow conceptions

of competence typically don't look closely to see what the alternatives might be. The preferred alternative has been the middle column of the appendix, (but not called an approach to competency as such, thereby preserving the vocational/general dichotomy) As I have indicated, there are some significant problems for this view.

To lead us on to a third model of competence, let us take a look at what some of the early critics of the first model suggested in the way of alternatives. In an important paper, Noddings (1984) applied linguistic analysis to the problems of defining competence and of clarifying the relation between competence and human action. Her first main conclusion was that competence must be differentiated from performance. She arrived at this conclusion via a critique of Rylean behaviourism as an inadequate account of competence. The key argument here is that if competence consists of a series of observable behaviours, then the same series of observable behaviours will be displayed by anyone competent in a given field. But it is evident that not everyone competent in a given field will display the same series of observable behaviours (think of competent teachers), hence competence is not the same thing as performance. Rather it is something that underlies performance. In addition, Noddings points out, the occurrence of observable behaviours associated with competence in a given field may be explicable by causes other than competence (think of actors playing the roles of, say, surgeons). So, she concluded:

> . . . if competence as capacity, is to be retained as groundwork for performance, then the problem of identifying reliable indicators of competence arises and this, it seems to me, is a tough problem demanding sophisticated methods and extensive investigation (Noddings, 1984, pp. 18-19).

She goes on to recommend an empirically based, comprehensive, naturalistic study of actual professionals indisputably held to be competent as the main source of a description of competence. From this, in relation to teaching, she suggests that it should be:

> . . . possible to construct theories that have some degree of the desired systematisation . . . capable of producing categories that will aid us in describing competence and in evaluating it (Noddings, 1984, p.21).

Noddings states that she knows of no programme of CBTE or PBTE that meets the considerations outlined in her paper. However, she commends earlier work by Kerr and Soltis as a promising extension of her ideas.

Kerr and Soltis (1974, p. 3) attempted to provide 'a theoretical description of teaching which is at least adequate to the task of identifying teacher

competencies'. I will not consider in any detail those aspects of their paper that were specifically concerned with the nature of teaching (these ideas generated a significant debate, e.g. Noddings 1974a and 1974b, Johnson, 1975). Rather, I will outline some of their general points about competence which are crucial to the third approach to competence which, I will be arguing, is much to be preferred to the two other approaches discussed so far in this paper.

Kerr and Soltis (1974, p. 4) set out to develop 'a theoretical model of teaching that possesses descriptive adequacy'. Following Green (1964), they propose an *action* description rather than a *behaviour* description, because

> . . . one applies the adverb 'competently' only to those movements which a person *intends* as a *particular* type of activity...Thus, while it is possible to describe teaching, or any other human activity, as either *action*, which necessarily involves intended activity and appeals to a person's reasons and goals to explain the activity, or as *behaviour*, which can be specified directly in terms of observable movement and appeals to causes for explanation, our interest in competency advises an action description (Kerr and Soltis 1974, pp.4-5).

Kerr and Soltis end up recommending that professional competence be conceived in terms of a set of action categories that are necessary to carrying out the profession, with further elaboration and development reflecting the 'logic' of this set of action categories. It is interesting that though the Kerr-Soltis proposal was published and debated from 1974 onwards, Noddings in 1984 reported that to her knowledge nobody had attempted to apply it to the problem of teacher competence. Walker's proposals on how to conceive of teacher competence (Walker 1992a) are perhaps the next development of these ideas.

If Noddings, and Kerr and Soltis provide a model of what linguistic analysis can contribute in this field, Price, I believe, provides a model of what it cannot do. According to Price (1974), (his paper is the presidential address to the 1974 Philosophy of Education Society meeting) there are four senses of the word 'performance'. The first applies to any action of a thing, e.g. the performance of a rock is its falling under gravity. The second applies to the action of any thing that accords with the design followed in that thing's production, and that leads to a specified concrete result, e.g. the action of a drill. The third applies to any action of a person that has parts he or she makes answer to the parts of the work performed and connects in ways that correspond to relations of the parts of the work, e.g. performance of a Beethoven sonata. The fourth applies to any action of a person that he or she makes accord with a moral rule.

After delineating and discussing each of these four senses, Price says:

> I can find no other senses of the word 'performance'; I conclude that it is wrong, without the invention of some new sense, to describe teaching as a performance at all . . . (Price 1974, p.326).

But Price's four senses are clearly not exhaustive. Can we not legitimately ask about Price's performance as president of the Philosophy of Education Society? What about job performance appraisal in general, e.g. David Hill's performance as general manager of the Australian Broadcasting Commission? It is clear, I think, that Price is arbitrarily ruling out an important sense of 'performance'.

The basic ideas on how professional competence might best be conceived, and which I have identified in the work of Noddings, and Kerr and Soltis, provide a good starting point for understanding the way that professional competency standards have been developed in Australia. While I will not here describe the processes, (see Gonczi, Hager and Oliver 1990; Ash, Gonczi and Hager 1992; and Heywood, Gonczi and Hager 1992 for details), the focus is on applying a suitable combination of applied social science research methods to arrive at a logically structured set of action categories of the kind described by Kerr and Soltis. This approach to conceptualising professional competence has been called the 'integrated approach', because it brings together the 'tasks' (or, more accurately, 'key intentional actions') of the first approach and the attributes of the second approach.

According to the integrated conception, competence is conceptualised in terms of knowledge, abilities, skills and attitudes displayed in the context of a carefully chosen set of realistic professional tasks ('intentional actions') which are of an appropriate level of generality. A feature of this integrated approach is that it avoids the problem of a myriad of tasks by selecting key tasks ('intentional actions') that are central to the practice of the profession. The main attributes that are required for the competent performance of these key tasks ('intentional actions') are then identified. Experience has shown that when both of these are integrated to produce competency standards, the results do capture the holistic richness of professional practice.

Recently it has become evident that there is still a lot of misunderstanding of the professional competency standards that have been developed in Australia under the aegis of the National Office of Overseas Skills Recognition (NOOSR) (e.g. Dall'Alba and Sandberg 1992), so it is worth pointing to some of their distinctive features. One of the most overused terms in the debate about competency standards has been 'atomistic'. Authors seem to assume that if an approach to conceptualising competence is labelled, usually by themselves, as 'atomistic' then it can be rejected without further argument. In chemistry, where atoms are discrete and

independent units, they nevertheless combine to form molecules which have quite different properties to those of their constituent atoms. So here atoms are a highly useful unit of analysis and are consistent with subsequent powerful synthesis. In reference to competency standards, 'atomistic' has no such clearcut meaning, nor does 'holistic'. Both are relative terms when applied to competency standards and their application needs to be justified by further argument. The fragmenting of a profession into a myriad of tasks, as the first approach to competence does, is overly 'atomistic', precisely because actual practice is much richer than sequences of these isolated tasks and the overall approach fails to provide any synthesis of the tasks. In that case we are justified in concluding that the distinctive character of the profession has been destroyed by the analysis. However the opposite mistake is adherence to a rigid, self-defeating, monistic holism that rules out all analysis. In practice, some degree of atomism in approaches to competence will be acceptable, provided that it is accompanied by a suitable degree of holism. The above professional competency standards produced by the integrated approach are holistic in several important senses.

- They are holistic in that competence is a construct that is inferred (as suggested by Noddings) from performance of relatively complex and demanding intentional actions (as suggested by Kerr and Soltis). The relative complexity of the actions can be gauged from the fact that a typical profession involves no more than 30-40 such key intentional actions.

- The holistic character of such competency standards is due also to the fact that the tasks (or intentional actions) are not discrete and independent. For example, actual professional practice will often simultaneously involve several of these intentional actions.

- A further sense in which these kinds of competency standards are holistic is that the intentional actions involve what Walker (1992b) calls 'situational understanding', i.e. the competency standards include the idea that the professional performer takes account of the varying contexts in which they are operating. A more general cognitive perspective is called on to frame a skilled intentional action appropriate to the context.

- Yet another sense in which these kinds of competency standards are holistic is that by integrating key tasks and attributes, i.e. integrating intentional actions with characteristics or qualities of individuals, competence is constituted by a relation between the professional and their work. (Contrary to Dall'Alba and Sandberg 1992, this means that Sandberg's [1991] findings actually provide strong support for the integrated approach to professional competency standards that has been used in Australia).

By being holistic in the above senses, these competency standards are the opposite of any significantly atomistic approach, whether the atoms be tasks or attributes (once again, contra Dall'Alba and Sandberg 1992, p. 2). In this way these professional competency standards strike a balance between the misguided extremes of fragmenting the profession to such a degree that its character is destroyed by the analysis or adhering to a rigid, monistic holism that rules out all analysis. That this balance is a reasonable one is indicated by the fact that these professional competency standards allow for professional discretion, i.e. they do not prescribe that all professionals will necessarily act in the same way in a given situation; nor do they require that all professionals will have identical overall conceptions of their work, i.e. these professional competency standards are quite consistent with one practitioner having, say, a strong commitment to social justice, while another is just as strongly committed to excellence of practice.

The nature of these competency standards will obviously determine how they should best be assessed. Since they are based on the idea that competence is a construct that is not directly observable, but rather is inferred from successful performance, it is clear that performance will be vital for assessment. Equally vital will be the requirement that sufficient evidence be gathered to justify the inference. While evidence from performance will be central to assessment, it may be supplemented by other kinds of evidence. This follows from the integrated nature of these competency standards in which attributes underpin performance. This means that the attributes often figure in the performance criteria. Thus, in some instances, evidence about possession of attributes, such as certain kinds of knowledge, might usefully supplement evidence of performance. (For a detailed treatment of these points see Gonczi, Hager and Athanasou 1992).

Educational implications of the integrated approach

Finally in this paper, I consider what integrated professional competency standards mean for higher education. I believe that the same points are applicable to other providers of vocational education, e.g. the technical and further education (TAFE) system. This discussion will be structured around the points in the third column of the appendix. (The previous section dealt with the first two points, viz. competence is inferred from performance and the holistic nature of the competency standards. So this discussion will start at the third point).

Competency standards make no claim to exhaust all facets of a profession, just as traditional entry procedures for professionals don't claim to be totally

comprehensive. What a good set of competency standards does is to provide a clear statement of what is considered to be important in competent performance in that profession. This is something which has been a long felt need of registering authorities and the like, thereby pointing to weaknesses in the present arrangements. After all, it would be rather strange if people who are in the business of registering or educating professionals insisted that it was too hard to specify what it is that distinguishes a professional from non-professional performance. This is essentially what competency standards do. To point out that professional work is complex is simply to require that valid standards will need to take account of this complexity. It is already evident in the professional competency standards that have been developed so far in Australia that it is possible to capture the complexity of professional work.

Moving to the fourth point, some people worry that competency standards will demand a uniformity in the way professionals practise which is totally inappropriate. It is pointed out that there is more than one correct way to perform most professional tasks. The problem here is that 'standards' are taken to imply 'standardisation' of procedure. In fact the standards are typically about outcomes, and how the outcomes are achieved is left open. The professional competency standards that have been developed so far in Australia do allow for the diversity that is proper to the practice of a profession.

Another worry, which brings us to the fifth point, is that as a result of establishing competency standards, the corresponding courses that prepare people for the profession will adopt competency-based training (see, e.g. Ashworth and Saxton 1990, pp. 18-19). Academics are, of course, correct in their rejection of professional courses becoming a series of practical modules, as the roles and tasks approach to analysing professional competence suggests.

However, when competence is conceptualised via the integrated approach in terms of knowledge, abilities, skills and attitudes displayed in the context of realistic professional tasks (or intentional actions), these consequences no longer follow. Rather than recommending the adoption of competency-based training, the integrated approach, by also emphasising requisite knowledge, abilities, skills and attitudes, offers powerful guidance for improvement of traditional courses in respect of content, teaching strategies and assessment procedures. So, for example, testing graduates against the competency-based standards would effectively identify strengths and weaknesses of the course. Hence, though I uphold the integrated approach to conceptualising professional competence, I do not recommend the adoption of competency-based training for professional courses.

Competency standards also offer educational and assessment benefits. The

competency standards themselves are a powerful guide to providers of professional education. However, it needs to be emphasised that they are not a curriculum document. So, for example, entry-level competency standards specify what new graduates should be able to do, but say nothing about how this state is to be achieved. Hence for providers there is as much flexibility as ever to decide what to teach, how to teach it and how to assess it. However, assuming that there is room for improvement in most existing courses, a good set of competency standards will provide invaluable guidance on content changes as well as new methods of delivery and assessment. As always, there is more than one way to teach effectively. Beyond entry level, competency standards offer considerable guidance for the longer-term development of the profession. Continuing professional education (CPE) has been criticised frequently for lack of direction and/or rationale. The clear specification of what a competent professional needs to be able to do will provide a much sharper focus for CPE. (See Hager and Gonczi 1991) Similar considerations apply to refresher courses for people returning to the profession after an absence, or those whose training is out of date. The value of competency standards for efficient and equitable recognition of overseas qualifications is also important.

A further worry, represented by point six, holds that competency standards are developed and controlled by government bureaucrats, e.g. the National Training Board. In fact, the philosophy behind the development of competency standards in Australia is that the profession or industry owns and develops the standards. In many cases, university staff are active members of the professional body, hence they have strong representation on the body that owns and develops the competency standards. In all cases, the professional body is a major stakeholder that is entitled to significant input into courses for their profession. Competency standards present a unique opportunity for professions in Australia to raise their community image by increasing their level of professionalism. For one thing, the competency standards are an explicit public statement of what the profession does, something that has not previously been available publicly in most cases. One aspect of professions increasing their professionalism would be a mature and productive relationship between the professional body and the providers of the courses.

The above considerations give the lie to a related misconception about competency standards, that everything that takes place in a course is dictated centrally by faceless bureaucrats. In fact, given that the profession will own the competency standards, there will be no greater central control than at present in, for example, accounting and engineering, where the professional bodies accredit the courses. (The Higher Education Council 1992, p. 6, notes and rejects the claim that a focus on outcomes will result in standardised or common courses.)

Since the competency standards are a powerful guide to providers of professional education without being a curriculum document, they provide common ground for discussion between providers and the profession that doesn't exist now. The lack of such common ground in the past has seen some providers fragment into a series of specialist departments that compete with one another for funds, staff, etc. and thereby lose sight of the totality of professional practice. The competency standards will enable the relative roles of the providers and profession to become clearer in a mutually cooperative environment.

Still a further worry, point seven, holds that assessment of competence involves ticking off a checklist of observable behaviours. Given the complexity of professional work, this is seen as a futile attempt to achieve objectivity at the cost of sacrificing validity (see, e.g. Ashworth and Saxton 1990, pp.22-23). I accept this as a criticism of the behaviourist task approach to competency standards. However when the integrated approach to competency standards is adopted, competence is not something that is directly observed. Rather, as pointed out above, competence is inferred from performance. This has the effect of placing assessment of competence in the same boat as other kinds of assessment in academic institutions, in that procedures are available to maximise its validity and reliability. (Gonczi, Hager and Oliver 1990, Section 5 and Masters and McCurry 1990). If these procedures are followed, then assessment of competence is as 'objective' as any of the alternatives. Similar points apply to claims that competency standards are too vague for assessment purposes (see, for example, Ashworth and Saxton 1990, pp.21-22). A properly planned and executed competency analysis will yield standards as specific as the case requires. (See, for example, Ash, Gonczi and Hager 1992).

Finally, point eight presents a criticism that is commonly put forward in relation to entry-level competency standards. It holds that because they prescribe minimum standards, they therefore discourage excellence by reducing everything to the lowest common denominator. A variant on this is that they promote deskilling. (The Higher Education Council 1992, p. 6, notes and rejects the 'Lowest Common Denominator Myth'.)

These charges are no more logical than making the same claims about traditional examinations on the ground that there is a minimum mark for gaining a pass. More specifically, this myth is based on a complete misunderstanding of the nature of the standards. For the charges to have any substance, the standards would have to relate to tasks that admit no degrees of performance, i.e. you can either do it or you can't. However in professional work, (and in most other kinds of work), such tasks are rare. Typically, the standards relate to tasks that admit many degrees of performance, as does the task of taking a traditional examination. In both cases the existence of a minimum satisfactory level of performance is

consistent with a full range of performances from excellent through to fail. (For a discussion of the kinds of standards, called 'described standards', that are appropriate for professional tasks see Gonczi, Hager and Oliver 1990 and Masters and McCurry 1990.)

In addition, as already discussed, entry-level competency standards are not a curriculum document. Of course the expectation is that most graduates of professional courses will greatly exceed the performance levels specified by the entry-level competency standards, just as most entrants to the professional courses greatly exceed the entry requirements. (For further discussion see Heywood, Gonczi and Hager 1992, Section 2.4).

Conclusion

A series of arguments about competency standards by various writers has been considered. It has been found that a way of developing competency standards that conform to the general requirements and principles proposed by these arguments is possible. This way of developing competency standards appears to meet all the theoretical objections that have been raised against competency standards. Those developed so far in Australia for professions according to these principles also seem to be satisfactory. How well they work out in the long term remains to be seen.

This suggests that it is crucial that we be clear about our conception of competence and consider alternatives. The 'natural' way of conceiving competence, i.e. as a series of tasks, has fatal defects. Likewise, the alternative of conceiving competence as consisting in attributes or generic skills also has marked limitations. This paper has argued that a third conception of competence, which integrates tasks and attributes, offers many advantages while avoiding the major limitations of the other two conceptions. This integrated approach suggests some challenges for the implementation of the Finn/Mayer recommendations. If the schools and higher education institutions restrict themselves to merely teaching generic competencies, there will remain a problem about how these translate into life and occupational competencies. On the other hand, facing up to the challenge of integrating the generic and the specific promises a range of exciting possibilities for the teaching and assessment of key competencies.

At the beginning of this paper it was pointed out that critics have labelled competency standards with all kinds of (often incompatible) -isms. Here is another one. Elliott has suggested that the:

> . . . widespread emergence of *fundamentalism* in the late 20th century is not confined to religious traditions. It is evidenced in most of the 'reforms' now sweeping our social institutions . . .

> The competency-based education and training movement is one example (Elliott 1991, p.119).

Elliott further points out that fundamentalist movements generally possess four characteristics:

> First, they attempt to reduce social practices to a small number of essential elements, against which the practices as a whole can be judged. Their view of competence is an atomistic one. Competence is specified as a number of discrete, atomised abilities which are held to represent its essential elements. Second, the essentials are derived from what is held to be an indubitable foundation of knowledge, such as the Bible, or, in the case of the competency movement, a science of management concerned with the prediction and control of human behaviour . . . Third, the essential elements of the fundamentalist's credo must refer to concrete tangible and measurable phenomena. Christ's resurrection and virgin birth are considered by Christian fundamentalists to be concrete events in time and place . . . Similarly 'competencies' were viewed . . . as concrete, tangible and measurable . . . Fourth, the essential elements are viewed as unchanging rather than culturally and socially relative (Elliott 1991, pp.119-120).

All of these features applied to the failed conception of competence that flourished in the 1970s. This paper has argued that none of these limiting features need apply to the richer conception of competence which is currently being used in Australia.

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APPENDIX

THREE DIFFERENT CONCEPTIONS OF COMPETENCE AND THEIR IMPLICATIONS

	BEHAVIOURIST OR SPECIFIC TASKS APPROACH	ATTRIBUTE OR GENERIC SKILLS APPROACH	INTEGRATED OR TASK + ATTRIBUTE APPROACH
1.	Overt performance is competence	General attributes as predictors of future performance	Competence inferred from performance
2.	Atomistic, reductive, trivial, mechanistic, standardised, routine, discrete tasks or skills	Abstract, remote from actual practice, problem of transfer. Overall rationale often lacking	Holistic, richness of practice captured
3.	Large number of specific competencies - list lengthens with complexity of work e.g. professions	Small number of generic competencies	Manageable number of key competencies
4.	Uniformity(one right way)	Diversity (> one right way)	Diversity (> one right way)
5.	'Doing' curriculum. Practical modules. Jettison current curriculum	Conventional curriculum. Fragmented into subjects	Powerful device for improving content, delivery and assessment of current curriculum
6.	Central control of curriculum	Provide autonomy in curriculum	Profession/provider, joint control of
7.	Checklist for ticking - invalid assessment	Traditional assessment - has its limitations	Competence demonstrated over time portfolios, etc. Assessment needs careful planning
8.	Minimum competence 'Lowest common denominator discourages excellence'. 'Deskilling'	Encourages excellence that is remote from professional practice	Richness of quality professional performance is captured

10 Selection for vocational education: some lessons from elsewhere

John Foyster

Background

In their 1983 discussion paper Some Issues in Access and Selection Geof Hawke and Richard Sweet (1983) proposed an integrating principle for considering questions of access and selection for places in tecnical and further education (TAFE) colleges:

> Systems have an obligation to ensure that students are equally provided with educational opportunities of a nature and quality suited to their original needs, and an obligation to ensure that students enrol in courses in which they have a reasonable chance of success.

Hawke and Sweet felt that this principle required, among other things, a greater degree of attention being paid to student selection. Although their own paper did discuss student selection to some extent, making such valuable points as that the variability of course applicants in terms of factors such as age, intelligence, and prior educational attainment leads to selection problems which cannot simply be solved by a mere ordering of applicants in terms of the aggregate marks for year 12 assessment; its emphasis, it is fair to say, was upon questions of access; selection, as an issue, existed in the context of access.

While vocational education remains varied with respect to its students, some changes which have occurred since 1983 suggest a need to re-examine some questions in the area of selection. Notable among these changes are the much increased extent to which younger applicants have completed year 12, the evolving role of TAFE, and the new emphasis on competencies and competency-based education. Questions of access to TAFE remain firmly on the agenda, but this paper will take principles of access as accepted, and will focus upon some selection questions.

Of the changes referred to above, the matter of the increased retention rate

to year 12 is most striking in terms of the remarks of Hawke and Sweet. As the proportion of young Australians staying on to complete year 12 at secondary school increases each year, and national goals are set which make even larger retention rates targets for the near future, larger and larger proportions of applicants for vocational education will have completed secondary schooling. For these young people, the variability referred to by Hawke and Sweet will be decreasing, especially in terms of prior educational attainment (whatever that means). In addition, the size and complexity of the selection problem will encourage systems to look for easier solutions to the question of selection. As a result, the possibility of considering the aggregate marks for year 12 assessment as a selection device increases.

Other factors may encourage such an approach. For example, in some Australian states it is already the case that at least some applications for vocational education are made through the authorities which handle selection for universities. What will happen when the selection pressure increases, and the aggregate marks for year 12 assessment referred to by Hawke and Sweet are readily available? Will these aggregates provide a convenient and *economical* part of the selection process? Will a proposed change to an emphasis on competencies in secondary schooling change the agenda if year 12 marks are increasingly intended to reflect work-related competencies? Greagg and Storey (1988, p.55) drew attention to risks of this kind: TAFE courses could in the future be geared to the requirements of the higher education authority, in much the same way as secondary schools and the Higher School Certificate become constrained as the gateway to tertiary education.

There is another reason for studying closely the selection system involving the aggregate marks for year 12 assessment: public examinations, often the method of year 12 assessment, are generally well thought of. Watts and Watkins (1991) come very close to endorsing their use as selection instruments. And as Patricia M. Broadfoot has recently written in *A Question of Quality: The Changing Role of Assessment in Education* (ACSA 1992), there is a totally erroneous belief—sadly very prevalent among politicians in my own country at the present time—that reasonable comparability can be preserved only by an examination. There is also the equally erroneous belief that educational standards can only be maintained by such examination. This widespread belief is often casually accepted and vigorously defended, usually with more volume than validity.

As selection for vocational education in Australia evolves, it is important to examine a full range of potential futures. The purpose of this paper is to reflect upon principles and practice in selection which might emerge in Australia in the near future.

As has already been indicated, the emphasis will not be upon access issues. Rather the paper will deal with the two elements of Hawke and Sweet's integrating principle, in other words, with questions of justice (broadly construed) and efficiency in selection.

Justice in educational assessment and selection

This paper does not dwell extensively upon the question of whether every individual in an assessment or selection system must receive an absolutely just assessment. This is not necessary, since it is generally accepted that no educational assessment system provides *perfect* justice, just as the judicial system in any country is itself imperfect. Thus there will always be anecdotal information, for example, about individuals who received assessments which were higher or lower than they *should* have been.

The concept of justice dealt with in this section does not address issues of *incompetence*, *corruption*, or *malice*; a system of just educational assessment based upon *assumptions* of incompetence, corruption, and malice would be practically unworkable, and the established practice is to treat such behaviours as matters which should be handled as special cases. Appropriate mechanisms need to be established to deal with these circumstances, since such cases have been observed to occur in the past in both public examinations and internal school assessments.

If we cannot achieve perfect justice, what should be regarded as reasonable justice? Assuming that we do not put in place an exhaustive system of assessment which corrects any errors in the assessment by having the students present and represent until either the assessor is satisfied that the assessment is correct or the student gives up, we are restricted to an assessment system which only allows a very small number of attempts to assess the student. As a result there will always be students, in any system, who receive an assessment which is better or worse than that which would be produced by a meticulous study of the students, involving at least a 24-hour monitoring of their lives for at least the two-year period prior to the assessment in order to understand every aspect of the students' achievements. Such a level of justice is not attainable, but all education systems hope to achieve a reasonable level of justice.

What constitutes a reasonable level of justice for an educational assessment system is established both by resource levels available and by the experience of the past. Thus while we might readily establish a high standard justice goal we could not expect actually to achieve it if it were far in excess of any previously achieved level of justice which was based upon similar levels of resources. In other words, justice has a normative component.

It is also important to note that we can set a standard for justice in two ways, by considering *groups* and by considering *individuals*. Justice for a whole group may include injustice for some individuals, and justice for one individual may involve injustice for other individuals (and thus for the group as a whole). What is acceptable justice in educational systems?

If we focus upon the largest and best known system of assessment—the system which operates at the end of secondary education as a selection device for higher education—then we are dealing with a system which assigns one of several grades to the student's performance. (A system which operates on a simple pass-fail criterion, such as competency-based assessment, cannot be a selection system since it produces only two categories of student. A competency-based system can be used as a component of a selection system, as will be discussed below.) The prevailing practice for establishing reasonable levels of educational justice in assessment for groups during the last half of the 20th century, for example, has been that while human errors will, in all educational assessment systems, inevitably lead to grades for some students which are wrong by one grade division, the number of students for whom the final grade is in error by two (or more) grade divisions should be as small as possible. Thus if the number of students in the group whose grade is out by two or more is very small then the system has achieved a reasonable level of justice. The statistical watchdog here—the device we can use to monitor how close we are to achieving our goal—is the *standard error of measurement*.

When it comes to justice for an individual student, the watchdog is often taken as the level of agreement between two assessors. For objective testing this watchdog is, in essence, the *reliability* of the assessment instrument. This embraces a range of technical questions which will not be explored here at any great length.

For other forms of assessment, in which grades are awarded by assessors, a somewhat different standard is observed. Properly trained educational assessors agree very closely on their assessments of particular student products. In those assessment systems in which a significant element of subjectivity in assessment is associated with common assessment practices, the currently popular methodology is to double-mark the assessable material. If there is sufficient agreement between the two markers then the work is regarded as having been assessed appropriately; if the assessors do not agree to an adequate level, then a third assessor, who has a supervising role, determines the final assessment.

The question to be resolved is the definition of sufficient agreement. While this is obviously resource-driven, there is considerable conformity in practice. For a single task being assessed on a 10-point scale, a disagreement of one point between two assessors would be regarded as a satisfactory level

of agreement (the final assessment would then be either the higher or the lower of the two assessments, depending on the practice of the educational system). If the disagreement is two points then some systems would allow the assessment to split the difference, while others would treat this (and all other cases with a greater level of disagreement) as a case in which the supervisor must become involved.

It should be noted that training for assessors attempts to remove consistent differences between assessors. For example, if one assessor, consistently gave much higher or lower grades than other assessors, then such an assessor would be very expensive to use, since every assessment would require supervisory intervention.

Accordingly, in practice, justice for individuals is defined in terms of the ability of two independent and qualified assessors to agree closely on the grade which should be assigned to a particular assessable item. (Unfortunately this depends upon the trainability of the assessors. While many assessors can be trained to use defined criteria consistently and well, there are circumstances in which such assessors are difficult or impossible to obtain. If the criteria are not well defined, this is much more likely to occur. It is interesting to note that this problem arises in all forms of assessment, including competency-based approaches. We are ultimately dependent upon agreement between assessors, even if we propose a system in which there need be only one assessor because, in an interesting leap of faith, we assert that all assessors will produce the same assessment.)

Efficiency

The first section of this paper has indicated what is intended to be attained. This section deals briefly with the question of how available resources should be allocated to achieve the desired levels of justice.

In general the available resources (which means largely the time of those employed in the education sector) are in limited supply and should be consumed sparingly. Thus, as a general rule, the minimum use of resources which achieves the required result is to be preferred. Thus we do not favour a system of assessment which is indefinitely long. This is an argument which has often been used in favour of public examinations, which require an overall low use of resources, albeit involving a *distribution* of resource use which might be regarded as less than optimum. However this does not overcome the problems of wide-scale cheating (and accordingly injustice) which occur in a public examination system, as will be described in the next section.

Regardless of the kind of resource use, however, a low level of resource use

may not always be the most socially acceptable solution. Justice, it is often said, must not be done but must be seen to be done. If two approaches to assessment led to the same outcome (equal justice) for the same cost, then we would do well to choose that method in which justice was more clearly seen to be done.

What is more difficult is the case in which the same (or very similar) outcomes are achieved by two different approaches, and that approach which is more visibly just is also more expensive. Society has to decide what price it is prepared to pay for the visibility of justice, and this is therefore a question of prevailing social conditions. In general, one might argue, there would need to be a strong case to make one spend more money to achieve the same ends—the same level of justice.

In some cases the additional costs will be worth paying, since there may be benefits not directly associated with the immediate educational assessment task. For example, it may be more expensive to involve more assessors, but involving more assessors increases the size of the pool of experienced assessors, with probable benefits in later years. Judgments about the desirability of such benefits will depend upon local conditions.

The costs of assessment vary very greatly; for example, in 1988 in South Australia the per candidate enrolment cost of assessing year 12 subjects which had an external examination component ranged from A$4.93 to A$829.00. Such a range of financial implications inspires reflection in administrators, especially in administrators who are being encouraged to reduce costs to a minimum.

In a typical assessment system most of the assessment costs are incurred as a result of hiring professional assessors on one (or more) of several bases—by the hour, for piece-work, or on a full-time basis. Accordingly, in estimating the cost of assessment we expect that the amount of time spent on marking and otherwise assessing student work will be a major factor, if not *the* major factor. To understand more about the costs of assessment, we need to be able to appreciate those elements which require more time from professional assessors.

Consider a single historical change over the past quarter century: the Australia-wide move to include school assessment as well as (or in place of) a public examination for selection purposes at the end of secondary education.

In the first case—with both forms of assessment now being included—in which the phenomenon is most apparent, it has almost invariably been the case that the public examination has *remained at the same length* (or very nearly the same length) even though it now only 'counts' for perhaps half of

what it counted for 25 years ago. A three-hour public examination alone formerly sufficed to provide an accurate assessment of a student's achievement; now we seem to require extensive school-based assessment *in addition to* the three-hour public examination.

Such a change in the assessment pattern accordingly involves:

- no reduction in the cost of the public examination in 'real' dollars;
- a hidden increase in costs as a result of teachers providing school assessments;
- a visible increase in costs flowing from payments made to those involved in whatever 'moderation' process is used for the school-based assessments.

Use of such a complex approach ensures that there must be an increase in the cost of assessing the subject. The increase appears to be due to the addition of a new form of assessment, but the emphasis has to be on the word 'addition' because it would have been possible to introduce a new form of assessment and simultaneously reduce the amount of 'old style' assessment, leading to a smaller change (or perhaps even no change) in the total amount of assessment. For example, the three-hour public examination might have been reduced, in this case, to a 90 minute public examination on the grounds that it is no longer required that the examination formally assess all objectives, as some course objectives are now being adequately covered in the school-based assessment.

The same argument applies for any assessment system leading to selection; the desire to acknowledge a wider range of student abilities (for example, as identified by Hawke and Sweet) may lead to a more complex assessment system, with more components and with greater costs, but this is not an argument for indefinitely extending the number and range of assessment procedures. We need to consider what argument there may be for using more costly and more extensive systems.

Several different reasons may be advanced for increasing the amount of assessment used to determine student grades for selection purposes. Here are four of them, briefly stated.

Equity

It is sometimes argued that with a diverse group of students taking a subject there will be a need for assessment patterns which are similarly diverse to allow students to have equal opportunities to demonstrate their skills.

Complexity

It may be argued that the particular subject deals with a complex range of

skills which would therefore need separate testing for each. For example, Richard Teese (1989) has described the 'many dimensions of academic prowess' to be found in those 'best predictors of scholarly success: [French, German, and Latin] oral mastery, literary form, literary history, grammar, composition, dictée'.

Validity

It may also be argued that assessments need to be made across the whole range of objectives in order for the overall assessment process to be valid. Clearly, if some objectives or skills are not assessed then they do not 'count' and are not effective objectives, throwing doubt on the relationship between the claims made about the subject and what it actually reports on.

Reliability

Every textbook on educational measurement makes the claim that longer tests are more reliable tests (that is, that the more sub-scores you add together the more reliable will be your total score). As a consequence, and independent of the nature of the syllabus, we may need more assessment because it will be more reliable (which everyone wants).

These four reasons do not have equal merit, and in any case depend crucially upon the circumstances of assessment.

With respect to *equity* it is certainly true that there may be substantial variation among the students with respect to some significant variables. It is also true, however, that if we increase the amount of assessment to allow 'non-standard' students to demonstrate their skills, we are also demanding that *all* students demonstrate skills across a much wider set of assessment instruments in ways which may introduce inequity for some other students. It is not clear that increasing the amount of assessment solves the problem. If students really do need very different ways to demonstrate their skills, for some cases at least it will be appropriate to offer different subjects for different groups of students, and to use different selection procedures.

With respect to *validity* it is certainly true that we must assess across the whole range of relevant objectives, however formulated. But this should not be confused with assessing across the whole range of content. Different subjects have very different approaches to handling this validity problem, which may be illustrated by considering typical history and physics assessment instruments. The typical history public examination offers students a much larger choice, and requires them to address formally only a fraction of the official 'content' of the course. But a typical physics external examination is much more likely to insist that every atom of content to covered. (In Victoria in the 1980s this meant asking the same question year

after year for one section of the paper because the examiners could not apparently think up an alternative question which covered that content.)

Where objectives are expressed in terms of content, the validity question becomes a serious one—but only because objectives expressed entirely in terms of content will always create problems.

The *complexity* question reduces to the validity question if properly formulated. But it does raise the additional question of just how complex a subject ought to be. Interdisciplinary subjects are likely to be complex, but those within a single discipline should, in principle, be containable to a reasonable number of objectives.

The question of *reliability* is more difficult to manage. While it is true that in general the longer a test, the more reliable it will be (or the larger the number of sub-tests used, the more reliable the aggregate will be), there are factors which question the wisdom of extending test lengths, one of which is cost.

More significantly, we must recall that to a great extent longer tests report more reliability substantially because they have longer reporting scales. This is of little use if the reporting scale is of fixed length. In South Australia, for example, there is a fixed reporting scale 0-20, which has been established largely on the basis of known errors of measurement in the existing three-hour examinations. When reliability is calculated for a fixed length of scale the increased benefit for longer tests is rather less. In a sense, then, there are natural limits to reliability in terms of the reporting scale.

This section has suggested that while there are arguments for making assessment more costly—in the name of justice—these argument are not always sound. In practice, less expensive assessment *may* be a reasonable option for selection purposes. To make such decisions, however, we need to know more about what justice in educational assessment means in practice.

Justice in practice

When the potential for injustice in assessment is recognised, how can and do educational systems respond?

In the earlier section on justice one method of addressing inadvertent injustice has been described: to reduce injustice to an individual student, essays, for example, are graded by more than one marker (which doubles the cost). In fact there are other methods of reducing inadvertent injustice. For example, in case even the pair of markers is biased, examination scripts from one school or examination centre may be divided and allocated at

random to a number of groups of markers. This process, when analysed more carefully, is not ultimately concerned with achieving justice, but is part of a process of corruption in public examinations which is generally unrecognised. Selection for vocational education ought to attempt to avoid such corrupt entanglements, and accordingly this question of corruption in assessment will be explored more fully.

The form of corruption in public examinations which is most obvious is *cheating*. Cheating associated with assessments is known to occur quite widely. Perhaps the most public form of cheating occurs when students buy essays, sometimes through widely advertised sources. But it would be wrong to assume that this is the only form of cheating which occurs on a large scale.

The introduction and use of school-based (or internal) assessment at the senior secondary level in Australia has been accompanied by intermittent very public claims about cheating. Teachers and others have made extensive statements about essays being copied, assignments and projects being recycled from previous years, and so on. This undoubtedly does occur, but unfortunately there is no reason to believe that cheating and the sharing of essays can arise in only this way.

Discussion of cheating in public examinations is less common in the press and other media, perhaps because the rituals of public examinations are so formalised that everyone knows what goes on. Occasionally the newspapers will carry a story about copies of an examination paper going missing before an examination, or of copies of the examination paper being available for sale before the examination, but this is very rare. That cheating in public examinations occurs on a much larger scale than this is not generally recognised, perhaps because it is uncomfortable to discuss it.

In traditional accounts of examinations, such as Mathews (1985), cheating is given short shrift and regarded as being controlled through invigilation. This is a very superficial notion of what constitutes cheating. Let us take a concrete example—two students submitting the same essay in a public examination. If we consider how duplicate essays arise in public examinations we will discover more possibilities than are usually acknowledged.

Cheating in public examinations is often conceived of as consisting of smuggling notes into examinations (whether in hard copy or electronic form) or of looking at someone else's work during an examination. Invigilation by experienced adults is supposed to eliminate such cheating. (Because invigilators occasionally catch students cheating in this way we know that such invigilation is necessary.)

Now consider the circumstances under which two students in a public examination submit identical essays (not merely similar in argument, but, say, 95 per cent word-for-word reproductions) in response to one question.

In the traditional understanding of cheating in public examinations this is difficult to explain. While a system of invigilation might allow one student to copy occasionally from another student, it is hardly likely that a whole essay could be copied. Invigilation would have to be virtually non-existent for that to happen. (In the actual case from which the early part of this example is drawn, it was easy to establish that the two students were seated in such a way that copying by one student from the other was impossible.)

The alternative traditional explanation would be that the essay(s) were copied from smuggled notes—but once again there are problems with this explanation, for it requires *two* students to transcribe from sets of notes without detection. This seems improbable. And there is now an additional problem: these notes must have been of the complete essay, otherwise the extent to which the essays were identical could not have been achieved. An explanation is now required as to how the essay came into existence.

Three questions require investigation: who wrote the essay, how was it that more than one person presented this essay in the examination room, and (possibly) why was *that* essay prepared?

To answer these questions we must move away from the traditional understanding of the way public examinations function, and by doing so we open significant questions about what occurs in these examinations.

As a preliminary, let us decide the answer to the second question. It is *not* the case that one student copied another's answer as that answer was being composed in the examination room. Nor did the two students take complete *written* notes of the essay into the examination room with them. The two students *memorised* the essay, and transcribed their recollections during the course of the examination. The two essays were only 95 per cent similar because one of the students had less ability to recall exactly the prepared essay. This extends the notion of cheating by establishing that cheating in a public examination, if it is agreed that this is how this particular form of activity can be described, can occur outside the examination setting.

So did the students cheat by taking a prepared essay with them into the examination room? This depends upon our notion of cheating; if they had smuggled in the essay in written form most would agree that it was cheating, but is the cheating any the less because the essay was committed to memory? It seems dangerous to suggest that reproducing a memorised essay is *not* cheating.

There are at least two reasons for this. First, the student who takes a memorised essay into an examination is performing a different task from the student who composes the essay in the examination room, yet the two essays are marked as though they were produced under the same circumstances. If the examination is one which leads to selection of some students over others for further study, then the student who reproduces the memorised essay can reasonably be suggested to have gained an unfair advantage over his or her fellow competitors. It is this point which we will use to establish a new condition for satisfactory assessment, going beyond the traditional ideas of validity and reliability.

Second, the question of authorship of the essay is uncertain. In the example we are considering, did the two students work together to construct the essay, or did one student write it and then make it available (whether or not for personal gain is not considered here)? If the two students in combination did prepare the essay then we might argue that although the essay was prepared outside the examination room a mitigating circumstance is that the essay *was* the work of the two students, so that the cheating was in some sense limited. But if one of the students merely used the essay prepared by the other student, then a double cheating is involved, since this student did not prepare the essay under the examination conditions and also copied it from another student.

This does not, of course, exhaust the possible answers to the first question. It is not necessarily the case that the essay was prepared by either of the students; it might have been prepared by a third party—an older brother of one student, someone unrelated to either of the students but willing to prepare an essay for them, or perhaps the teacher of the students.

If there are only two students who offer the same essay in the examination then it is probable that preparation of the essay was confined to a small group, perhaps only the two students and perhaps a friend who helped. But if a larger number of students at a particular school offered the same essay then suspicion about the authorship of the essay must fall upon the teacher. This phenomenon has also recently been observed in Australia.

This is not a theoretical possibility. Fortunately, however, when teachers and others prepare essays for students to memorise they often strive too hard, leading to discovery.

It was pointed out earlier that the process of redistributing essays from one school to a range of markers, intended to prevent prejudice on the part of a pair of markers affecting all the students at one school (among other things), actually was part of a process of corruption. This redistribution, or randomisation, conducted in the name of fairness, is some encouragement to those wishing to use prepared essays, for if there were no randomisation the

markers, working through a school's essays, would notice the duplication. Once the essays are redistributed so that essays from the same school are not seen by the same markers, the chance of the duplication being recognised is, in general, much reduced, since only occasionally by chance would two duplicate essays fall to one marker.

This form of cheating is revealed, however, when the author of the essay (whoever that might be) does too good a job, for in most states in Australia markers (and chief examiners) have in place a mechanism for reconsidering samples of essays, often focusing on exemplary essays. If the author has done *too good* a job, the duplicate essay will come up for discussion and the duplication—the duplicity if you wish—will be discovered. Someone who writes a more modest essay for duplicate use has less chance of detection. One good rule for organising this kind of cheating is to sell to interested parties a good, but not too good, essay. The other rule is not to sell too many copies of the same essay for the same purpose.

The two cases described above—based upon incidents which have been detected in Australia in the last decade—illustrate some ways in which cheating can and does occur in public examinations. But we have so far addressed only two of the three questions identified earlier. It is by dealing with the remaining question that we can examine the large-scale cheating in public examinations which occurs world-wide.

Why was *that* essay prepared? In other words, no matter who it was who wrote the essay, how was it that the author knew the subject of the essay? Progress can be made by considering a specific case. This case will also be useful in persuading those who doubt the ability of senior secondary students to remember essays of several hundred words.

In 1988 George Madaus, in his paper The Influence of Testing on the Curriculum performed a very useful service by printing three sample essays which illustrate the phenomenon. These three compositions were written for the Irish Primary Certificate Examinations in 1946-48.

Consideration of just one sentence in each essay will illustrate the point being made by Madaus.

The final sentence of A Bicycle Ride (1946) reads:

> Early summer roses grew all over the pergola which stood in the middle of the garden.

The final sentence of A Day in the Bog (1947) reads:

> Early summer roses grew all over the pergola which stood in the middle of the garden.

The final sentence of A Bus Tour (1948) reads:

> Early summer roses grew all over the pergola which stood in the middle of the garden.

What inferences may be drawn about the performances of the students? As Madaus points out, inferences about the students' ability to write may not be warranted. But the students do appear to have ability to take tests: Madaus bluntly suggests that:

> . . . a high score on the exam may not have indicated well-developed writing skills at all, but instead, simply the ability to use memorised material with whatever the theme for that year (p.94).

These essays recall the duplicated essays which have already been discussed. And Madaus' inference may very well be the one which should be drawn for a large proportion of public examinations in Australia. It is this proposition, and the implications for the development of selection procedures for vocational education in Australia, which make up the next section.

Note, however, that we can summarise the assessment problem which has been described here by pointing out that while the assessment activities in the cases described in this section are valid (they *appear* to be assessing what they set out to assess) and reliable (different markers agree on grades), they are unsatisfactory because they lack an additional quality which is required of educational assessments—they are not *homomorphic*. Homomorphism (perhaps it might be more appropriate to think of *homoeomorphism*, but we will use homomorphism throughout) is a quality which is required because educational assessments are complex events which occur in a context. The conventional notion closest to homomorphism is construct validity.

Assessments are homomorphic when they present the same structure to all candidates. (Homoeomorphism might be a preferred word to use if trivial differences are regarded as acceptable.) Examples of reliable, valid, but non-homomorphic assessment would include the cases described in this section, where for some students the task was to write an essay but for other students the task was to recall and write down a memorised set of words or, to include an example of non-homomorphic assessment which does not involve cheating, an essay-writing task in a second language when the second language is in fact the first language of some candidates. Homomorphism in the assessment task is associated with homogeneity in the candidate population.

In general, assessors try to prepare assessment instruments which will be homomorphic for the candidates because if they do not there can be problems of reliability and of validity, and in extreme cases accusations of bias. Test bias is the phrase usually used to described non-homomorphic tests when the variation in the perceived test structure is based upon a demographic variable (sex, race, etc.).

The assessment problem we have described in this section is a form of non-homomorphism which is unlikely to be described as test bias because the variation in test structure as far as the candidates are concerned is not related to the most commonly used demographic variables.

How corrupt are public examinations?

Indications of possible corruption in examinations have been provided in the previous section. An essay presented by a student may have been purchased from another author, or may have been obtained without charge from another author, and passed off as the student's own work. Such a situation, since it requires the student falsely to claim another's work as her or his own, would generally be accepted as cheating.

What of the examples cited by Madaus? Here the student recalled the general details of an essay, memorising large portions of it and then, in the examination, made minor amendments to suit the actual theme set. The skills demonstrated by such a student are not those which superficially require to be demonstrated. If the marking is done in terms of the superficial requirements—the apparent objectives—then this student has also cheated, by comparison with the student who actually did compose the essay in the examination session.

What is the range of behaviours of students in public examinations in Australia? Reference has been made above to an example in which two students jointly prepared an essay for presentation in the examination, and to an example in which a teacher prepared an essay for a whole class.

We might assume that such examples continue at a reasonably low level without detection, since the concern for justice to the students at a school has brought about a system of redistribution of scripts which masks it; some cases will be detected, but only by chance. The foregoing sentence is too glib, too hasty. The redistribution process is not concerned with individual justice, but with justice for a particular group—the students in one class or

school. But why is this significant? Marks and grades are allocated to individual students, not to groups of students.

The true beneficiary of this process which, as we have seen, by its very existence masks some forms of cheating, is the reputation of the school or teacher. Should justice for the teacher or school be a primary concern of an assessment system? Since reputations, and to some extent incomes, depend upon this question it need hardly be asked. We can assume that no teacher would be willing to tolerate a system in which a whole group of students, in particular her or his group of students, would because of the assignment of markers, receive slightly lower marks. But if we accept this position, we must also acknowledge that the risk of cheating in the form which has been described is somewhat elevated; there may need to be checks and balances. As has been shown above, such efforts to protect the reputations of teachers and schools actually increases the possibilities for cheating.

Other aspects of the assessment behaviour of Australian students require consideration. First, to what extent does a slightly weaker form of the Madaus variety of cheating occur? Second, (and this returns to the third of the three questions asked earlier) when an essay is prepared, why is that particular essay prepared? These questions are connected.

Earlier in this paper two examples of coping with validity problems were given. In one case, history, a very large number of questions was given and the student had to choose a few from them. Such an environment is ripe for the Irish Primary Certificate technique. If an examination consists of a large number of questions of sufficient generality, of which only a few must be answered, then it is obviously *relatively* easy to select a couple of likely essay topics and prepare in advance complete essays, for which minor modifications—bridging passages of some kind—can be made when the actual examination is sighted. If every student does this, alone and without the assistance of teacher or other coach, then no one is disadvantaged, and only the markers are fooled if they think they are working with spontaneously written essays. Of course, if any students actually compose their essays in the examination room and do not transcribe prepared pieces then considerable injustice is done as a supposedly homomorphic assessment turns out to be non-homomorphic.

It should not be thought that examiners—in particular the markers of examination papers—are unaware of the dangers which have been described above. In a history examination, for example, examiners might have as a criterion for marking essays that the essay actually answers the question (since if an essay does not actually answer the question it purports to answer one possible explanation, among several, is that the essay is a

prepared one and the student has not bothered to, or has not been capable of, rejigging the essay so that it appears to answer the set question). But implementing such a criterion may prove difficult when examiners are faced with a very good essay which (just) misses the point. Unfortunately, in this situation it may be that the better the essay, the stronger our grounds for doubt about its authorship.

The second example dealt with physics, where quite the reverse situation was found: a particular question was asked every year, so that all rational students prepared themselves to answer exactly that question. Once again, for many students this was an exercise in memorisation, rather than calculation.

Of course, in these two cases we cannot be sure exactly whose work we are looking at; did the students prepare the answer, or did the teacher or some other third party? For yet another example, consider the question of translation from a Latin into English in a Latin examination. For many years two translations might be required—seen and unseen. The purpose of the unseen translation is obvious, but what was being examined in a seen translation? Memorisation? But of whose work? Who prepared the crib? If the assessment purpose was purely one of memorisation, then surely it would have been more efficient to label and assess it as such.

In fact, second language examiners have long held doubts about seen translations as assessment devices, and seen translations are found much less frequently in language examinations nowadays.

But a crib need not consist of a complete essay. One could say that more generally a crib is produced when a teacher takes the approach of teaching to the test to such lengths that there is confusion as to whether the teacher or the student wrote the examination script. The protection offered to schools and teachers by randomising scripts, already referred to as protecting the reputations of teachers and schools, can now be understood more clearly, for this is a direct protection, in some cases, of the real examinee—the teacher who prepared the crib. In this view, some public examinations are in fact repeating examinations of the teacher's ability to prepare appropriate cribs and the students' ability to memorise these.

George Madaus' paper suggested several principles in considering the relationship between testing and the curriculum. The third of these was that if important decisions are presumed to be related to test results, then teachers will teach to the test. As we have seen, Madaus' principle does not go far enough, since there is evidence that some teachers will go so far as to

prepare the answers for the students. These teachers don't teach to the test, they teach the answers to the test: they cheat.

The extent to which public examinations are tests of recollection of previously prepared cribs cannot easily be gauged. We could consider the various forms of examination and identify which of them lend themselves to such preparation, but quantifying the extent of use of cribs (which are unjust if they are prepared by anyone other than the candidate or if only some candidates use cribs) is probably beyond any reasonable research project.

There are some subject areas in which cheating (in the form of preparation of cribs by someone other than the student) is encouraged by the form of the examination—subjects in which answers are in the form of essays in response to a few questions selected out of many general questions are the most susceptible. The more general these questions are, the more susceptible they are to being answered with prepared essays. But are there also other subjects which are less susceptible to cheating? There are, and these may provide some guidance in the search for selection instruments for vocational education.

If, however, the examination is very clearly specified, and there can be no doubt about what is included in the examination, then teaching to the test may be exactly what is desired. The examinations which seem to match this closely, and which also seem least susceptible to cheating, are performance-based.

Among the subjects included in public examinations in Australia three seem particularly resistant to student/teacher cheating: music performance, dance performance, and drama performance. Of these perhaps the most widely known is the practical music examination. In this form of examination a small repertoire of clearly defined tasks is set down. The student is required to perform all of the tasks, and the examiner, as a connoisseur (using Elliot Eisner's vocabulary), makes comparative judgments between the various performers. Here it is impossible for the examinee to cheat; everyone prepares for exactly the same performance. All teachers work to eliminate the weaknesses they identify in the performance of their students. Similar, though not identical, structures exist for assessment in dance and drama. Here the assessment task is designed to be homomorphic.

Such a system of assessment is, of course, competency-based, and thus fits in with the initiatives presently being implemented in training (and to some extent education) in Australia. Unfortunately, harking back to the section on efficiency, such assessments are also among the most expensive.

The case against public examinations, in summary

Many public examinations are in general unacceptable as assessment devices because they are so vulnerable to cheating (where this is construed to mean that examination performances reflect the skills and abilities of someone other than the examinee). The non-homomorphism of the assessment makes it unjust to use the assessment for selection purposes. Thus, although public examinations are relatively cheap, results from those examinations, and other examinations similarly constructed and assessed, are inappropriate for use in a system designed to select students justly according to their abilities. Some public examinations are resistant to cheating, and do have some desirable qualities. It may be possible to make use of those identified qualities in designing a selection system for vocational education.

Choosing a selection system for vocational education

In evaluating a selection system we want to know whether that system meets appropriate justice standards, and whether it does so efficiently.

What has gone before suggests that the competency-based approach to assessment may have some elements which make it suitable for selection for vocational education. In particular, cheating is very difficult and any well defined performance-based system is more likely to be homomorphic.

The use of a competency-based selection system is, unfortunately, not likely to be achieved. The problem lies in the issue of prediction, for a selection is, whether we like it or not, a prediction. In competency-based education we assess in order to be able to infer competence.

An important point to remember here is that *within* the vocational education system we are not thinking about inferring competence in a general sense (for example, competence as a carpenter) but in the particular sense: has this learner at this point in time demonstrated this particular competence (or more probably, this skill in the sense defined earlier)? But *at the point of selection* we are interested in competence more generally and to a limited extent predictively. The student has not yet been exposed to training in the required skills, and what interests us is whether we can identify the student who is likely to succeed. Such a selection task is akin to that used in assessing practical music in the public examination context; if we could find an appropriate and well defined performance task we could be confident that the performance was genuinely that of the applicant, but the question would be whether such a task—or set of tasks—exists.

What are the possibilities for selection for vocational education? Troost (1992) has recently identified five possible elements in a selection process: school-related achievement, scholastic aptitude, personality features, formal criteria such as waiting time, and chance. (The bulk of this paper has indicated the doubtful value of the first of these.) In practice, many selection procedures use a combination of these elements.

Greagg and Storey (1988) produced a more extended list of possible elements in the context of selection for TAFE. The following table sets out these elements against Troost's list.

Troost	*Greagg and Storey*
School-related achievement	School marks Teachers' reports Tests
Scholastic aptitude	Tests Essays Talk plus test
Personality features	Personal statements Interviews
Formal criteria	First come, first served Waiting periods
Chance	Balloting
Other	Work experience reports Trainability tests Work sample tests Art folios (etc.) Presentation.

This list can be reduced in size considerably if the homomorphism criterion is applied as a surrogate for justice.

School-related achievement is not, in general, acceptable for reasons outlined earlier in this paper, although some limited testing procedures may meet the condition. These will, however, be very much like selection procedures listed elsewhere.

Aptitude tests do, in principle, meet the homomorphism criterion, though this does not mean that all such tests will be acceptable; on the contrary, many of them are not.

Personal statements and interviews are unlikely to meet reliability criteria, and also would be unlikely to meet the homomorphism criterion.

The wait your turn procedures, whether one-shot (first come, first served) or ongoing (in a waiting list), appear to be just and to meet the homomorphism criterion. They are definitely inefficient, however, and could only be used in association with other selection procedures. The ballot is an attractive alternative to these procedures, although it may also be inefficient.

Finally, the procedures included by Greagg and Storey but not included by Troost appear far more promising. Provided the authenticity of artefacts can be established, these may be very useful components of a selection procedure for vocational education.

Elements in a selection process should be valid and reliable, in the conventional educational testing sense. But these characteristics are insufficient to produce a just system of assessment. The elements of the selection system—and indeed the elements of testing in general—should also be homomorphic in the sense used in this paper: an assessment instrument should test the same skills in all candidates, for an instrument which does not do so is likely to be unjust.

There is room for considerable optimism that efficient and just selection approaches can be developed, and the list provided by Greagg and Storey identifies many appropriate devices. It is important, therefore, not to select the wrong devices for the wrong reasons.

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11 Quality improvement in the vocational education and training industry

Susan Holland

Concern about the quality of services provided to students and other clients, and a focus on outcomes rather than processes are emerging as imperatives for the Australian vocational education and training systems in the 1990s. This is increasingly evident as each state system is being drawn into a national vocational education and training system as part of an explicit reform agenda. This paper will examine the role of the technical and further education (TAFE) systems in the national vocational education and training reform agenda: specifically, the impact of introducing competency-based training and establishing quality assurance systems within devolved operational structures. It will be argued that the TAFE systems, as part of the vocational education and training sector, need to put in place quality assurance policies and processes if agreements such as the National Framework for Recognition of Training are to work in practice.

Let us consider first the Australian national reform agenda. The major elements are neatly summarised in the recently agreed national goals for vocational education and training. Overall, the national system of vocational education and training is intended to:

- be effective, efficient and collaborative;
- improve the quality of outcomes;
- improve opportunities and outcomes for individuals;
- be more responsive to industry;
- improve access and outcomes for disadvantaged groups;
- increase contribution from industry and individuals as training is to be seen as an investment (MOVEET 1992).

Fundamentally then, the national reform agenda is about expanding education and training on the one hand, and reducing rigidities within current awards and education and training practices on the other.

These goals, which are merely signposts to foreshadow the direction of reform, were endorsed by VEETAC, the Vocational Education, Employment and Training Advisory Committee, at its meeting in June 1992. VEETAC comprises senior state officers of the TAFE and training systems and

representatives of the industry partners, that is the Australian Council of Trade Unions (ACTU) and the Confederation of Australian Industries (CAI), and is chaired by the Commonwealth. VEETAC then, given its membership, can be seen as the policy arm of the reform agenda in operation.

In brief, the reform agenda in policy and practical terms is far reaching, not merely because it is national in scope but because it has tripartite and cross-sectoral support which transcends party politics. Its origins lie in economic and social considerations which find expression first in the industrial relations arena and which are, we will see, being reflected in a new pedagogical base for vocational education and training. The mission statement of the 'Business/Higher Education Round Table' captures the duality of the rationale well:

> A prerequisite for a more prosperous and equitable society in Australia is a more highly-educated community. In material terms it fosters economic growth and improved living standards through improved productivity and competitiveness with other countries. In terms of equity, individual Australians should have the opportunity to realise their full social, cultural, political and economic potential (Business Higher Education Round Table 1992).

In other words, the rationale for change stems from Australia's weak position by comparison to other OECD countries which is indicated in general terms by:

- our lack of productivity and severe balance of trade deficit;
- the apparent low skill levels of much of our current workforce and the segmented nature of it which is particularly the case with respect to gender.

So, reform of education and training is seen as an urgent priority if Australia is to improve its economic position by the 21st century.

It is this industrial relations context to the reform agenda which is of particular interest to TAFE systems. This is so because of the way in which the core business of TAFE—vocational education and training—has been fundamentally shifted, since the starting point for all major curriculum development is now not educational issues *per se* but industry competency standards. Unless an industry sector has developed competency standards which have been endorsed by the National Training Board, there is no agreed outcome basis by which the corresponding national curriculum development work can proceed. To date only a few industry sectors have developed their standards and still less have had their standards endorsed (*NTB Network* 1992). In practice, however, significant national curriculum development has occurred over the last two to three years in competency

format in the absence of endorsed standards because of pressure from particular industry sectors which, as part of restructuring, have been keen for workers to benefit from more flexible forms of training in line with new awards.

The most notable example is that of the Metals and Engineering Industry. Significant funds, in excess of A$2 million, have been expended through ACTRAC, the Australian Committee on Training Curriculum, in developing the so called national 'metals modules' which form the new trade-based course that replaces some 14 separate trade certificates. In addition, a new operative-level form of training that provides an alternative to the trade route, particularly for existing, unqualified but experienced employees, the Engineering Production Certificate (EPC), has also been developed. It is currently being offered together with the modular trade courses through most TAFE systems. Despite massive curriculum development, all of which has been modular and in a competency-based format, there is still no agreement by the industry partners to the competency standards *per se*. This is now expected to be achieved by early 1993.

To pursue the case study, the question has to be asked: Has this competency-based approach been of benefit to students training to enter the metals industry? The cursory answer is that it is too early to tell in terms of long-term outcomes. A fuller analysis reveals, however, that there are a number of apparent benefits:

- Students who complete the modular-based metals trade course will be more skilled than those previously because they will have acquired competencies across the fabrication, electrical and mechanical streams.
- The outcomes approach means that students have more opportunity to control and pace their own learning.
- The EPC offers an alternative form of training not previously available to those at operative level without formal qualifications.

It is fair to acknowledge that the decision to re-focus curriculum development, delivery and assessment of training in this direction did not necessarily arise from an evaluation of available options by educators but rather from the industrial relations context which demanded a pedagogy that could provide a more equitable means of accessing and recognising training. The curriculum expression of award restructuring is an outcome-based model of education and training which is designed so as to provide for multiple entry and exit points, recognition of prior learning, including that derived informally from life experiences, and credit transfer. In this sense competency-based training contributes an important equity orientation towards vocational education and training.

In developing the model, competency-based training has become both a system of linked processes and an approach to teaching and learning. As a

system of linked processes, competency-based training involves:

- development of industry standards;
- development of the corresponding curriculum for courses and training programmes;
- establishing mechanisms for accreditation and national recognition;
- provision for flexible methods of delivery and outcomes-based assessment;
- certification of student achievement.

As an approach to learning, competency-based training:

- places primary emphasis on what the learner can actually do;
- is focused on outcomes rather than learning processes or time spent engaged in these processes;
- is concerned with the attainment and demonstration of knowledge and skills and their application;
- is concerned with achieving flexibility in the use and adoption of national industry standards while still enabling the consistency essential for national recognition.

There has been criticism of competency-based training from some quarters partly because as we have seen, it has arisen to meet the demands of award restructuring and as such has not been subject to scrutiny or debate by educators. This is not to say, however, that competency-based training does not have educational potential. Concepts such as flexible learning, multiple entry points, pathways and recognition of prior learning are essentially emancipatory in character and when fully implemented will provide a better deal for young people and the existing workforce. Notwithstanding this, competency-based training has been characterised by some in such a way that at first glance it appears to be anti-educationist. As Hager and Gonzi (1992) have argued, however, many of the myths associated with competency-based training can be debunked. In brief, competency-based training is not necessarily behaviourist, complex, only about training which is centrally controlled or developed, nor is it focused only on the lowest common denominator in terms of performances, or impractical to assess.

Clearly, competency-based training, like all other pedagogies, is neither wholly deleterious nor a panacea to all our educational problems. It is simply a tool. And yes, it is a tool which we as educators have used and misused before. But like any tool in the kit of educators or trainers it has the potential to make a difference. If competency-based training provides a means of promoting alternative pathways to higher education, training or employment, is used as the basis for granting credit where none has been granted before, and contributes to the breaking down of existing rigidities in the way we often draw and reinforce boundaries around the various sectors of education and training, then it is an approach that I endorse as a valuable

step forward. It is a step forward because of the potential to add value to student learning.

The work of the Mayer Committee in developing a set of key, generic, employment-related competencies is further evidence of a step forward. This cross-sectoral educational work has demonstrated that competency can be viewed holistically and developed to integrate knowledge and skills, and their application. Competencies of this kind apply to work generally rather than being specific to work in particular occupations or industries. In this sense it is possible to describe knowledge and skills richly enough to be able to identify discriminating variables which may be used to distinguish between performance standards at arbitrary points or levels. Preliminary field testing undertaken with employers and trainees in industry during the consultation phase in the development of key competencies indicate that the notion of distinguishing levels for the key competencies makes sense in real work situations (Mayer Committee 1992). More research, however, needs to be done to validate and establish as benchmarks the current level descriptions.

In practical terms, the implementation of competency-based training certainly does create difficulties for TAFE systems. A few, as yet unresolved, questions illustrate the point:

- What is the role of workplace assessors and who determines their suitability for assessing on-the-job competencies *vis-à-vis* the off-the-job assessment which will be conducted typically by qualified TAFE teachers or their equivalent in private training organisations?
- To what extent can vocational skills be satisfactorily demonstrated and performed to the requisite industry standard outside an actual work situation?
- How are competencies to be recorded now that the critical issue is no longer 'who is the best apprentice?' but 'which competencies has this apprentice required?'

By the end of 1992 the following mechanisms are likely to be in place which will assist TAFE systems and other providers to implement competency-based training. The National Framework for Recognition of Training (NFROT) came into existence in August, 1992. It has been endorsed by MOVEET as a means of ensuring that accredited training is recognised nationally and that there is consistency in the application of the principles which characterise a competency-based system of vocational education and training, namely:

- Assessment will be measured against clearly defined competency standards set by industry and endorsed by the National Training Board.
- Prior learning will be recognised and credit transfer arrangements will be promoted.

- Consistency will derive from a focus on outcomes.
- Common criteria will apply for registration of providers and accreditation of courses.

A common format for the development of modular, competency-based curriculum has been recently developed by ACTRAC and endorsed by other key stakeholders. This means that there will be greater consistency in curriculum design and that more attention will be paid to the difficult task of deriving units of competency and learning outcomes from industry standards. Currently a staff development train-the-trainer package and strategy is being developed which will provide opportunities for key personnel such as TAFE teachers, curriculum writers and industry trainers to become familiar with the pedagogical issues involved in undertaking such tasks.

Notwithstanding these national agreements there are a number of important 'quality' questions which have to be addressed, including: 'How have TAFE systems in respond'ng to the national reform agenda assured students of the quality and vocational relevance of their courses?' Traditionally TAFE systems have dealt with quality assurance through their accreditation systems. In some cases in the past, courses have been largely internally developed and did not involve or allow for very much industry input or scrutiny. In other cases, as in New South Wales (NSW), there has been a long tradition of industry involvement, and external review panels have always been a feature of the accreditation system. Irrespective of these differences in the past, in line with a key tenet of the national reform agenda, 'the level playing field', all TAFE systems have lost their monopoly in respect of course accreditation and correspondingly, registration of providers. Accordingly, in all states and territories there is now an independent accrediting authority, often created by a specific piece of legislation. This is the case in NSW, where the Vocational Education and Training Accreditation Board has been established since mid-1991. In line with the provisions of the legislation, the NSW TAFE Commission has negotiated self-accrediting status and has now established a TAFE Accreditation Council to manage its accreditation processes.

At the same time as TAFE systems have been responding to the national training reform agenda, they have also been restructuring in their own right. In NSW the former Department of Technical and Further Education was subject, along with the Department of Education (schools sector), to a major management view, the Scott Review, which resulted in significant organisational changes. In summary, TAFE NSW became a commission with an independent board; the teaching schools became training divisions with an explicit industry or educational focus; colleges were clustered into networks and later into larger groupings as institutes; head office functions such as teacher recruitment, budgeting, planning, quality control and other

related operations were devolved or out-sourced, with a corresponding reduction in staff numbers.

In 1992 there were a small number of central support divisions and 11 institutes: three are institutes of technology and eight are institutes of TAFE. Each of the metropolitan institutes has significant state-wide functions in addition to their delivery responsibilities through the college/campus structure. All 13 training divisions, which are jointly responsible for the development and maintenance of TAFE curriculum, examinations, and the setting of quality assurance standards for recruitment of staff, provision of facilities and equipment, selection of students and course delivery, have been devolved to relevant institutes. Responsibility for the development of corporate policies and frameworks in critical customer service areas such as marketing and quality assurance including accreditation, remain a central function. Thus there is a quality assurance and customer service group which includes divisions in marketing (corporate and international), educational quality assurance and student services (examinations and enrolments).

The challenge, then, is to improve quality while devolving the majority of the operational functions, which determine whether a particular service, such as the enrolment process, actually meet student needs. As with industry generally, the vocational education and training industry, including TAFE systems, are under increasing pressure to more visibly and credibly implement quality assurance measures. The pressure is from internal and external sources:

- Internally, students and teacher need an assurance of the quality and consistency of the educational services provided irrespective of the location or circumstance whereby these are offered.
- Externally, industry expects a timely response in the development of new courses, and relevance in terms of the vocational content and technological context.

To respond to these internal and external pressures, the approach adopted by NSW TAFE has been drawn from the Australian Standard for Quality Management Systems. Many in industry will already be familiar with the application of Australian Standards to various products. A standard also exists for Quality Management Systems (AS 3901). Its purpose is to define a system for 'all those planned and systematic actions necessary to provide adequate confidence that a product or service will satisfy given requirements for quality'. The standard consists of separate elements which describe the kind of procedures and records that must be established and maintained to ensure confidence in the quality of a system.

At this stage NSW TAFE has undertaken preliminary work to group and translate these elements into an educational service delivery context. It is no

easy task. What follows is an outline of what this translation might look like in terms of a major education and training system such as NSW TAFE.

Management responsibility for maintaining quality

- TAFE management has the responsibility to develop, implement and maintain policies and procedures to achieve a quality educational service to its customers which includes students, staff, as well as external clients.
- Management must support personnel with responsibility for quality assurance by providing adequate resources.
- Management must review its quality system at appropriate intervals.

Meeting the needs of industry, the community and individual students

- Procedures must be established and maintained to ensure that the requirements of customers are known and can be met, and that individual students have been enrolled in the correct and agreed course/subject/module.
- The design, both of course content (curriculum) and of the programme of courses offered in a particular institute/college must reflect student needs, industry requirements and be soundly based in educational terms.
- Current courses and other curriculum documents must be readily identified and obsolete ones destroyed as part of a review and maintenance cycle.

Delivery of quality courses, with appropriate staff, and provision of student services

- The college/campus must maintain procedures for delivering and reviewing courses to the standards set down in course documentation for content, teacher qualifications, assessment and physical resources.
- All resources which TAFE purchases to provide educational services—including staff recruitment—must be chosen by selection procedures that ensure that they meet specified requirements.
- Students must have access to services such as counselling, course information advice, or tutorial support to support them in their studies, and appropriate student and course records must be maintained.

Maintenance of appropriate assessment and testing, and conferring of awards

- Procedures must be established and followed to ensure that initial, ongoing and final assessment occurs as necessary, and that assessment is valid, and consistently applied.
- Records of students' enrolment, attendance, assessment and examination results and final award must be maintained.
- Student outcomes must be reviewed on a regular basis, problems

identified and improvements made, with the aim of increasing student success.

Support of teaching and learning through maintenance of the physical environment and human resource development

- The college/campus must provide a physical environment appropriate for learning, and occupational health and safety requirements must be met.
- Human resource development needs of staff who are responsible for developing or delivering courses to students must be identified so that priorities can be set and training planned and delivered.

Maintain checks on the system through educational quality audits

- All aspects of the quality system must be audited to ensure that activities comply with set procedures.
- Auditors undertaking such review and monitoring must be trained appropriately.

What would the operation of a quality management system mean in practice? Put simply it would mean that meeting student needs would be seen as an important value and would therefore become the prime focus of *all* activities in practice. Also, all functions within the TAFE system would be carried out by staff in a manner consistent with the value of 'continuous improvement'. TAFE NSW believes that changing the internal culture of the TAFE system to embrace these values is necessary, particularly in the context of a devolved structure. It is easy for consistency to be lost under the guise of autonomy unless there are clearly articulated and understood standards. If value is to be added to student learning then it is clearly essential, for example, that all students enrolled in a particular course have the same chance, subject to their ability, of satisfactorily completing the course irrespective of the place or time or mode of delivery, or the specific teacher involved.

Gaining executive and staff commitment to reorient existing operations so that students come first is not a single-event process. Nor can it be done in an isolated or piecemeal fashion. It requires an integrated and system-wide strategy which has been developed through collaborative processes so there is ownership and recognition of the need for change. TAFE NSW has set itself such an agenda, but over a two to three year time frame. As a billion dollar enterprise with more than 400 000 students and 20 000 staff, there is a significant amount of work to do in reshaping existing policies and procedures to achieve a more explicit customer focus consistent with our vocational education and training charter.

Currently the Queensland TAFE system has made a similar commitment to establish quality management systems. It is likely that all other TAFE

systems will soon begin to define quality in customer service terms. It is interesting to note that the university sector has been responding to the quality imperative in some respects, at least, in a similar way.

Arising from the employment, education and training minister's 'quality' reference to the National Board of Employment, Education and Training (NBEET) (Baldwin 1991) each Australian university in the next three years will need to construct a system of quality management appropriate to its context and mission. As we have seen, there are three preliminary questions to consider:

- Who are the customers?
- What are the products and/or services?
- How is it intended to achieve congruence between these, that is, fitness for purpose?

As recent commentators (see for example Dixon and Gardner 1992) have noted, there are in fact a number of measures already in place in universities which are used to assure the quality of academic experience. These can be summed up as:

- designing for quality through procedures;
- attaining quality through attainment of conformance to design, that is, continuous improvement.

It can be argued that many of the concepts associated with quality theory—continuous improvement through feedback, use of collaborative processes including team work, and teacher rather than management input into the curriculum and course design—are essentially educational in character and so are compatible with the core function of universities. The same situation, of course, also applies in the case of TAFE sector.

So, there is no reason why the TAFE systems cannot continue to pursue those quality assurance measures which are likely to add value to student learning on the one hand and to result in higher levels of customer satisfaction on the other.

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12 Quality assurance audits in technical and further education: meeting the needs of the ministers

K. K. Navaratnam

Introduction

In contemporary Australia, the technical and further education (TAFE) system needs a vision, a mission, and strategies to deal with the issues that will lead to economic transformation. The training delivered by public and private providers must be useful to individuals, communities, and the country as a whole. The providers are expected to impart key competencies such as knowledge, skills, and attitudes in technical aspects, communication, life skills, self-awareness, and self-control among the next generation of workers and managers of manufacturing and service industries. They are also expected to develop the desirable 'mix' of vocational skills required by various occupations.

Increasing funding to the TAFE sector will not resolve the issues associated with breadth and depth of training and their relevance to the real needs of individuals and workplaces. There must be a training system that is capable of producing a quality workforce trained in both specific vocational skills and key competencies. In fact, the current debate about initiatives to bring about a worthwhile TAFE system in the 1990s, which is the decade with probably the greatest potential for change in the management of the TAFE system in Australia, should include quality assurance and quality audits as tools for successful management. The use of quality tools, along with political and policy support, offers the prospect of a clever and capable Australia for the 21st century through the TAFE systems.

Quality assurance audit in TAFE

Quality audit techniques

Quality audit is a management tool used to evaluate, confirm, or verify activities related to quality (Mills 1989). It is defined as:

> . . . a systematic and independent verification or evaluation process to determine whether activities and related results comply with planned operational requirements and activities and whether these activities are implemented effectively and are suitable to achieve objectives or requirements of product, programs, or services (Standard Australia 1991; American Society for Quality Control, 1986).

The quality audit is not an alternative to an inspection. The primary purpose of the quality audit is to conduct an independent review and evaluation of performance in accordance with the defined procedures so that corrective action can be taken to effect continuous improvement in critical activities within an organisation.

Quality assurance is a planned monitoring system of controls applied to those activities which significantly affect or impact on the quality of a product or service or critical activity. In technical and further education, the ultimate purpose of the quality assurance function is to meet the requirements of four major stakeholders: the governments, the providers, the students, and the employers. Accordingly, the requirements for TAFE management of programmes or courses must be clearly defined in the first instance. That is, for each process, certain requirements or standards must be developed and used to guide TAFE through the introduction, implementation, and evaluation of the quality assurance system. For this reason, there must be functions and procedures in place to perform quality audits and their existence must ensure that the requirements of customers are being established, implemented, fulfilled, checked, revised, and continuously improved.

The TAFE system consists of an integrated and a complex programme of activities interconnected by organisational structure and management. This complexity calls for management to have some means of determining the effectiveness of the existing activities and identifying areas requiring corrective action or improvement. This is best achieved by the systematic planning, designing, performing, and reporting of audits by an independent person on the compliance between the projected and actual activities, and the organisational objectives as identified in strategic and operational plans. This may include the auditing either wholly or in part of the following aspects: management system, management responsibility, course

development, accreditation, marketing strategies, admission and student support, facilities, teaching and learning strategies, assessment of students, maintenance of standards, recruitment and professional development of staff, support services, supplier control, occupational health and safety, and reporting and accountability (Collins *et al.*, 1991). Thus, quality audit in TAFE is a fact-finding process used to determine the suitability and conformity of various components within the organisation to established requirements or standards.

Levels of quality audit

In technical and further education, the levels of quality audit can be categorised into four types: system audit, policy and programmes audit, process audit, and product and service audit. A system audit reviews the management strategy used for meeting the needs of stakeholders. It can be characterised as a review of the operation and management of the entire TAFE organisation including activities such as planning, implementation, measurement, and improvement. A policy and programmes audit reviews current policies, procedures, and operating instructions that are specified in strategic and operational plans, activities, and performance indicators. A process audit is an in-depth review of a particular process and activities that are performed as specified in the procedures and work instructions. A product and service audit is a detailed examination of the characteristics of graduates, and other product and services unique to the TAFE system before or after they are accepted by the customers. The four kinds of audit can be performed either wholly or in part within the TAFE organisation. In spite of the differences and commonalities among the four levels, they are all important in establishing a mechanism for the identification of opportunities for improvement in the TAFE system.

Types of quality audit

Generally, quality audit can be viewed from three perspectives: first party, second party, and third party audit, depending on who is carrying out the audit and the location of the auditee. First party audit (internal or self-audit) is conducted by a designated person within an organisation in order to verify whether quality activities comply with planned arrangements and to determine the effectiveness of the system. In first party audit, management, together with the quality auditor, should determine which quality system elements, procedures or job instructions are to be audited, and when. In fact, the scope of the audit must be jointly decided by the auditor and auditee. In the case of technical and further education, the auditee can be a college director, the manager of a unit, or the executive

director of a division, and the auditor may be the quality manager or quality assurance auditor. Second party or external audit is the audit undertaken by or on behalf of a purchasing organisation, including the purchase of products or services by one company from another within the same group. Third party or extrinsic audit is the audit undertaken by an independent certification body or similar organisation. Although the three types of audits differ in the purposes for which they are conducted, the basic methodology adopted in the auditing process is the same (Stebbing 1990). This paper mainly addresses the internal audit as it is the most useful to TAFE management for making improvements in the existing TAFE system.

Steps in quality audit

Quality audit is a planned approach to measuring compliance of procedures and activities in relation to inputs, processes, and outcomes of an organisation. It seeks objective evidence to determine that an activity has been carried out in accordance with procedures and work instructions. Unless efforts are made to measure the relationship between actual and expected inputs, processes, and outcomes within an organisation, it is impossible to detect the gap between what is intended and what is achieved in terms of performance. The philosophy of auditing is to insist on objective evidence of quality at the point of application or process and which demonstrates the existence and effectiveness of the appropriate activities and system. The scope and the level of an audit are variable factors that have to be considered in detail during the auditing process. Further audit requires systematic planning, performance, reporting, and follow-up.

A structured approach to the audit process and proper training of audit personnel is a key component in the auditing of effective and efficient planning, development, and delivery of technical and further education. In TAFE, the auditing process may involve the following five steps:

- scheduling and initiation of audit;
- preparing an audit plan;
- implementing the audit plan;
- analysing and reporting;
- conducting follow-up.

While each step is likely to be different from the others, these steps are common to all, regardless of the types of audit. Further, how each step is executed will have a direct effect on the other steps (Sayle 1991).

Step 1: Scheduling and initiation of audit

The audit is scheduled on the basis of the importance and sequence of the activity. The schedule must consider the availability of resources and the

time frame for different programme activities. It should receive wide distribution among senior management, so that all know when their audits are programmed and any fear or opposition attached to the concept of auditing can be discussed, negotiated, and resolved well ahead of scheduled auditing. The initiation phase may include the following steps: define the purpose, define the scope, determine the required resources, establish the authority of right of access, identify the performance standards, contact the auditee, develop a checklist, review performance history, and develop an initial understanding of the system (Arter 1989). If any of these steps reveals that the programme to be audited is not prepared to meet the requirements, the audit should be postponed until such concerns are resolved to the satisfaction of the auditee and auditor (Lofgren 1991).

Step 2: Preparing audit plan

A detailed audit plan must be designed to ensure that the auditing process is effective, efficient, relevant, credible, and timely, and that any potential disruption during the auditing process is avoided. The auditor must develop a plan consisting of the audit scope, the audit timetable, the names of the audit team members, and performance standards applicable to the audit. Audit performance standards must be clear, concise, and unambiguous. These standards may be in the form of policy and procedures, manuals, procedures, work instructions, programme specifications and job specifications. In fact, any meaningful audit activity should be based on recognised requirements or standards. The audit plan should be flexible in order to incorporate changes desired as a result of the information gathered during the audit and to permit effective auditing. If the auditee objects to any provisions in the audit plan, efforts must be made to resolve these before executing the audit. At the end of this step, there should be mutually agreed terms of reference; specific methods and activities; data sources; estimated resources; and a tentative time frame for reporting.

Step 3: Implementing audit plan

The audit commences with an opening meeting with the auditee. Following this, objective evidence is collected through interviews, review of documents, and observations of activities and conditions in the areas of interest. The objective evidence can consist of both quantitative and qualitative information. Conformance should be substantiated by objective evidence. After completion of the audit process, all observations must be documented for reporting purposes. Non-conformance should be identified in terms of the specific requirements of the quality standard or other documents against which the audit was executed. In addition, evidence of non-conformance should be investigated further to determine its significance. The auditor is only responsible for identifying the non-

conformity. Non-compliance must be based on facts, not on subjective opinion. In this step, the key aspect of the audit function is to monitor the overall performance of an organisation, and identify substandard performance or potential problems. In fact, the comparison of 'what is' with 'what should be' is the major part of the executing process. At the end of this step, there should be sufficient data and comparisons to allow interpretations and judgments to be made.

Step 4: Analysing and reporting

The audit report should be issued as soon as possible after the completion of the auditing. The audit team should meet to consider and evaluate the evidence generated during the audit. They should analyse any apparent non-conformance so that valid conclusions can be drawn. This analysis should also take place even when only a single auditor is concerned. The auditee is responsible for determining and initiating corrective action. The results of the audit are reported to the senior management responsible for the technical and further education and training system. It is important that, in the process of formulating specific corrective actions, the auditor discusses them with either the nominated representative or the person in charge. This will enhance the credibility of the auditing function.

The basis for corrective action is that adverse conditions are identified and corrected. For this purpose, causes must be determined and reported to management. The corrective action requests must be specific, objective, and useful. As a part of the audit report, a response must be requested from the auditee within a specified time period. However, the auditee should be given the opportunity and sufficient time to recommend the appropriate corrective action. If the response is not received by the requested date, a follow-up for the response is necessary with the emphasis on commitment to corrective action. A positive response will be straightforward and will include specific corrective action steps and a schedule for completion. If the auditee has taken the time and effort to provide a response, it must be acknowledged with a response evaluation.

Step 5: Conducting follow-up

The follow-up can ensure the effectiveness of the audit by assuring that corrective action is implemented. The audit and follow-up action can be conducted in accordance with documented procedures. The time scale for following up the corrective action should be agreed and recorded. Corrective action and subsequent follow-up audits should be completed within a time period agreed to by management in consultation with the auditor. During the follow-up, it must be determined if the corrective action was responsive to the corrective action request; that it was complete in addressing all significant aspects of the corrective action request; that the

corrective action was continuing wherever necessary; and that management has established procedures for monitoring the effectiveness of its remedial actions. In technical and further education, this stage could be carried out as an entirely separate process. Discretion must be used in providing adequate follow-up to ensure corrective actions are acted upon.

Key factors in conducting quality audit

- Audit must be conducted on the premises of the auditee or place of application.
- The aim of the auditing is to identify problem areas so that corrective action will lead to continuous improvement, not to assign blame or take punitive action against people responsible for audited activities.
- Audit requires measurement against a standard or criteria so that conclusions can be drawn.
- Auditing needs knowledge, skills, and experience. These should be developed by a formal auditor training course, observations of audits, work experience in audits, and conduct of audits. Ideally, auditors should possess a balanced knowledge of the system and its processes, people, procedures and outcomes. They must be able to understand different perspectives without any personal bias.
- The quality auditor must not be the person having direct responsibility for designing and delivering the technical and further education and training.
- The auditor should not pass judgment on an individual's activities. Auditing should be carried out to determine objectively if the organisation and activities are being operated as documented.
- Established working methods such as procedures, job instructions, and other relevant forms and records provide some of the major objective evidence that is sought during the audit process.
- The emphasis in an audit should be on discussion, listening, communication, and cooperation. It should not be a one-sided scrutinising process.
- An organisation should conduct a series of planned quality audits, specifically internal audits, of the existing management system.
- It is necessary to make notes of observation and comments which may need to be followed up by checking records.
- Concentration on agreement on necessary action to amend the system is preferable to emphasising the non-compliance.
- The auditor should ensure that the audit process is not side-tracked or subjected to all the grievances of the organisation and internal politics and disputes.

Potential benefits of quality audit in TAFE

- Quality audits provide objective evidence to the management about the suitability of, conformity to requirements of, and effectiveness of the various components of the TAFE system.
- The effectiveness and efficiency of the TAFE system and its programmes can be systematically improved. In auditing, the concept of efficiency is seen as 'input-centred', because it is concerned with ensuring that activities are carried out in the prescribed and appropriate fashion. Effectiveness, on the other hand, is seen as 'output-centred' because it is concerned with the extent to which useful achievements are accomplished.
- Quality assurance audits can identify areas for improvement through the identification of duplication, inefficiency, ineffectiveness and waste in the delivery of technical and further education.
- Quality audits are a means of making continuous improvement in technical and further education through a new approach to management strategies.
- Auditing results can confirm the appropriateness and effectiveness of existing policies and procedures.
- Quality auditors report the results to senior managers by considering them as the customers for the completed audit.
- Quality audits can be performed by people who are not part of the implementation of the programmes. This gives credibility, validity, and reliability to the audit process.
- Quality audits reflect the needs of stakeholders. Any organisation using quality audits can provide objective evidence to its stakeholders that it has an effective programme.
- The current performance of an organisation can be used to project future actions through quality audit. A futuristic view can be established as a part of the audit.
- The adequacy of the management system, practice, and methods of quality training programmes can be identified.
- Recommendations emerging from audits are likely to be accepted by and useful to management.
- The basic steps used in quality audit are the same regardless of the depth and level of auditing. Thus, comparisons of different systems or programmes is possible.

Conclusion

The Commonwealth Government and state governments and other stakeholders have imposed several requirements on technical and further education recently. These requirements can be incorporated into quality

standards to create further growth and expansion in the TAFE sector. These standards, to satisfy a defined need in a controlled manner, could provide a basis for quality assurance audits. Auditing of these standards can establish credibility in the TAFE system. That is, value placed on skills formation by the Australian technical and further education system can be increased through quality assurance auditing.

Quality auditing is quite a challenging undertaking. The success of the techniques of auditing is predetermined by the way they are introduced into the organisational culture. In quality auditing, it is necessary to understand the requirements of the customers in TAFE and what is meant by quality if the product or service is to satisfy the stated need. Use of quality auditing in all aspects of the TAFE activities, from curriculum design, management, through assessment of students, can provide an objective base for continuous improvement. That is, the audit results give authoritative support to managers to carry out improvements.

The five steps in auditing are not complete by any means. Depending on the complexity of a TAFE system, they need further development, revision, and refinement. However, the steps can be used as a reference document and guide. The reality is that a majority of TAFE providers have not used quality approaches in order to meet customer requirements and match the quality initiatives taking place in manufacturing and service industries. There are few comprehensive mechanisms in place to monitor the quality of knowledge and skills provided to the students. A detailed investigation and informed debate should be conducted on quality auditing in the TAFE system. It is again asserted that necessary improvements can be achieved through quality auditing. Senior management must be in a position to take corrective action on non-compliance. When objective evidence of non-compliance exists, senior management will not have any choice other than to deal with it firmly so that the commitment to continuous improvement in the TAFE system is demonstrated.

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About the authors

Dr Charles Benson is the Foundation Director of the National Center for Research in Vocational Education, Berkeley, USA.

Mr John Foyster is Head of the Statistics Division, National Centre for Vocational Education Research, Adelaide, Australia.

Dr Dennis Gunning is Director of Assessment Services of the Scottish Vocational Education Council, Glasgow, Scotland.

Associate Professor Paul Hager is Head of the School of Adult Vocational Education, University of Technology, Sydney, Australia.

Dr William Hall is Executive Director of Australia's National Centre for Vocational Education Research in Adelaide, Australia.

Dr Susan Holland is General Manager, Quality Assurance and Customer Services, NSW TAFE Commission, Sydney, Australia.

Dr Nancy Jackson is Co-Managing Director, Automotive Parts Sectoral Training Council, Ontario, Canada.

Dr Ute Laur-Ernst is Head of Department V, German Federal Institute for Vocational Training, Berlin, Germany.

Dr Kathiravelu Navaratnam is Executive Officer of the Evaluation and Strategic Audit Unit, Queensland Department of Employment, Vocational Education, Training and Industrial Relations, Brisbane, Australia.

Mr Rory O'Connor is Manager of Quality Systems, New Zealand Qualifications Authority, Wellington, New Zealand.

Mr Geoff Stanton is Chief Officer of the Further Education Unit, London, United Kingdom.

Professor John Stevenson is Head of School of Continuing Education and Technology, Mt Gravatt Campus, Griffith University, Brisbane, Australia.

Mr Jeremiah Witherspoon is Assistant Minister for Vocational/Technical Education, Ministry of Youth and Sports, Monrovia, Liberia.